

Game of the month: **THEME HOSPITAL** - is it in perfect health?

PCREVIEW
• Issue 67

over
40
new products
reviewed

PCREVIEW

THE COMPLETE GUIDE TO PC LEISURE

DVD IS COMING

It's the technology that will gobble up the CD-ROM, but what can it do for you? **PAGE 35**

WIN!

A Pentium
OverDrive with
MMX
technology

GAMES FOR RENT

Pleasure at a daily rate

ACTUAL CLUB EDITION

Gremlin's footie classic comes home

SPEEDSTER

We preview the high velocity racer from Psygnosis

PLAY YOUR FAVOURITE GAME FOREVER

How to make your gaming thrills last longer

THE AWE64 GOLD

The best sound card ever from Creative Labs

BRYCE 2

Make and move mountains the easy way

HOW TO...

Upgrade your PC to MMX
Make your own multimedia
Get to grips with Simply 3D 2

SOPHIE'S WORLD

The bestseller goes multimedia

WHICH PRINTER?

Splendid quality for under £400

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Waka-waka-waka - DVD gobbles up the CD-ROM

APRIL 1997

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This month...

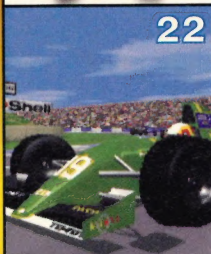
For Rental 8



Games for rent

Instead of shelling out wads every time you want to play the latest new game, you'll be able to rent them. We report on the latest trends in software distribution. But that's not all, we've also got news on faster modems, Bill Gates' Simply Interactive PC and Soap, the incredible new graphics software on the way from MetaTools.

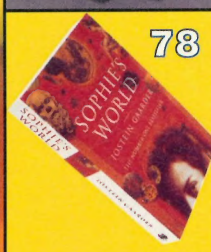
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Play your favourite game forever

The lifetime of your favourite PC game needn't end when you've clocked-out after the final level or set the world record lap time in Formula One competition. Numerous add-on discs are available for nearly all the top games. We report the nigh-upon infinite expandability of PC games with special looks at the add-on packs for Quake, F1GP2 and C&C: Red Alert.

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Sophie's World on CD-ROM

As a novel, *Sophie's World* by Jostein Gaardner has sold over five million copies. Now this captivating treatment of the history of philosophy has been converted - with some success - to CD-ROM. We review Macmillan's eclectic journey into a virtual world of higher thinking and ancient Greek puzzle games.

87



Playing God with Bryce 2

Creating stunning tree-covered mountain ranges, seaside sunsets and bizarre alien terrains is the speciality of Bryce 2, the new landscape generator from MetaTools. We show you exactly what this esoteric program can do, and manage to review it at the same time.

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How to make your own multimedia

The indie-rock band 37 returns for the second part of our making multimedia tutorial. This month we show you how to add sound and hotspots to your interactive pop single. And to help you do all this, we've included a full version of Medi8or Entrée on CD REVIEW.

DVD: THE CD SLAYER

Like some great big hungry Pac Man, DVD has appeared on the horizon, and it's going to gobble up the CD-ROM as we know it. Our in-depth feature tells you everything you need to know about this new high density disc technology. What can DVD do for you? Find out over on page...

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THEME HOSPITAL

Bullfrog returns with a game all about spoof diseases and health service headaches. Read our postmortem on page...

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Exclusive to PC REVIEW



FULL
PROGRAM
ORIGINALLY
WORTH £29

Create your own amazing 3D animations with the full version of Simply 3D, plus we bring you an exclusive demo of the incredible Simply 3D v2.

PLUS: A full version of Medi8or Entrée 3.0, Carmageddon, Obsidian, Links LS and more.

CD REVIEW

TOMB RAIDER

Exclusive
Lara's back
for part two
of the
demo.

SPACEBAR

Enter an odd
alien warping
hole with our
exclusive
demo.

MASTERCLIPS

Exclusive - 100 pieces of
clipmedia from IMSI.



FOOTBALL PRO 97

Exclusive
gridiron
action from
Sierra.

This month on CD REVIEW...

Player

Part two of the *Tomb Raider* demo leads off in your disc's games section, followed up by *Carmageddon*'s road rage, *Space Bar*'s weirdness and *Obsidian*'s oddities. Then there are demos of *Air Warrior 2*, *Football Pro 97*, *Links LS* and lots more.

The Works

Unbeatable! This month we bring you the full commercial version of *Simply 3D*, complete with a 100-page manual on how to use it. And on top of that we have an exclusive demo of *Simply 3D 2*.

Multimedia

Make your own Christmas and birthday cards using *PrintMaster* from Mindscape. Plus, there's a full version of the multimedia authoring package *Medi8or Entrée 3.0*.

Pic 'n' Mix

Free! 100 more pieces of clipmedia courtesy of IMSI's *MasterClips*.

See
page
117

Open up the disc label booklet for a quick reference guide to controls for the games on CD REVIEW. Turn to page 117 for your five-page guide to using the disc, including hints, tips and more.



Actua Soccer Club Edition

Yes, you've seen *Actua* before. And *Euro 96* too. Finally, however, you'll have the chance to control English teams in top flight competition. Now that's news!



Speedster

Coming soon from Psygnosis is this tyres-over-bonnet 3D racing game. Find out how its developers are managing all the car physics, designing the tracks and having a hoot with the vehicle selection options.



Everything you need to know about Travel

With the help of the Net and CD-ROMs you can plan a journey to any place on this small green planet. We point out the best digital info.



Magic: The Gathering

The cult fantasy card game has finally made it to the PC. Our RPG expert unfolds his special card table and prepares to conjure up another mystifying review.



Comanche 3

Boasting a new Voxal Space 3D engine and packing all the firepower you'd expect from a USAF gunship helicopter, we present *Comanche 3*. Find out just what makes this flight sim so breath-takingly good.



Red Alert Cracked

The second part of our *Red Alert* tips sees you completing the Allied missions then changing sides to play as the Russians. Put some vodka on ice...



Surviving Diablo

In part two of our *Diablo* tips we tell you when to fight and when to run, how to maximise your experience point potential and - shock - how to buck the system.



Which Printer

Colour ink jet technology is now better and more affordable than ever. Find out which printer you should buy in our round-up of eight new models, each of which costs less than £400.



Turn your PC into an MMX

First, learn how to install an MMX OverDrive chip on page 100. Then turn to page 122 where we give you the opportunity to win one all your own. Aren't we nice?



Mastering Simply 3D 2

Create a beautiful fishtank complete with bubble-blowing angelfish as we teach you the basics of *Simply 3D v2*. It's on your coverdisc.

EASY FIND

PLAYER

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Tips and solutions to all your PC problems.

WELCOME

An alarming situation arose this month in our office. It left a bad taste in everyone's mouth. Yes, we had a major Windows accident. A young PR representative from a major British games company was showing us his firm's latest offering. As is often the case with pre-release versions, it refused to work. The young rep chatted away to us as he attempted to delete the files from our hard drive. As he whithered away, for reasons best known to the Devil, his mouse hand selected all the files on our PC's hard drive and moved them to the wastepaper basket. Immediately pain gripped the hearts of everyone near the crippled PC. Its directory structure was lost, and although we could see all our old files, we couldn't restore them to their correct locations. The whole sorry episode ended with us having to reformat the hard disk and reinstall Windows 95. How can an operating system that's meant to be so smart allow its users to be so stupid? Oh well.

Garrick Webster, Editor pcreview@futurenet.co.uk



YOUR COMPLETE GUIDE TO PC LEISURE

Welcome to the UK's most discerning PC magazine. Every month PC Review brings you...



NEWS

Ever wanted to take a game home without paying £40 for it? Now you can through the new games rental scheme being set up by Gamester. In addition to that we've got news on the Simply Interactive PC and 56Kbps modems.

The PC industry is an exciting one, and we'll bring you that buzz every month. As well as the latest on games, multimedia and productivity, we keep you bang up-to-date with the ever-changing PC hardware scene. If a new soundcard or processor is causing excitement, you'll hear it here first. We're not scared of new technology – the kit you'll buy next year is explained today.



Deputy Editor
Owain
Bennallack.



PLAYER

Theme Hospital's been in development longer than it takes to get a hip replacement through the NHS. Nevertheless, it's here and it's our game of the month. Also reviewed are *Kick Off 97*, *Magick: The Gathering* and *Pod*.

We offer entertaining, detailed and stimulating games reviews that give you a feel for the games you want to buy. Our reviewers are experienced gamers who write with passion and authority. Also look out for behind-the-scenes reports from the hottest games studios as well as tips and in-depth solutions for hit games.



Games editor,
Mark
Ramshaw.
He knows
his stuff.



MULTIMEDIA

In novel form, *Sophie's World* has lingered in the bestseller list for years. Could it do the same now that it's been turned into a CD-ROM by the Multimedia Corporation? Read our unmissable review on page 77.

There's more to entertainment than games, and that's where our multimedia section comes in. We pick out the very best of the latest CD-ROM releases and review them on the basis of how compelling their content is – we're not just impressed by fancy graphics, we're looking for real substance. Our multimedia reviews are the toughest in the business.



Graham
Southorn. Our
multimedia
man.



THE WORKS

Printer technology has taken another leap forward with the new models from Epson and Canon. We put eight printers – all selling at less than £400 – to the test. Then we've got reviews of *Bryce 2* and the AWE64 Gold.

The Works is where you come for the more serious side of computing. But we see no reason why dabbling with creativity software and producing your own graphics or music shouldn't be fun. The Works is also where you'll find our utility software, in-depth buyers guides, hardware projects and answers to our readers' problems.



Technical
editor Mat
Broomfield
presides over
The Works.

CD REVIEW

The finest coverdisc you'll find on any PC mag – the slickest, most reliable front end, and the best exclusive game demos, productivity apps and multimedia software. Don't miss our exclusive full version of *Simply 3D*, plus our equally exclusive demo of *Simply 3D 2*.



The PC REVIEW charter

AUTHORITY: All the team calls upon extensive experience in their fields.

HONESTY: We never allow corporate interests to obscure the truth.

VARIETY: Each month we select a mix of hardware and software.

DETAIL: We always check the facts – we never take a company's word for it!

VALUE: You are spending your own money – so price is always an issue.

QUALITY: We seek out the best and turn down dozens of products offered to us.



Our coveted Essential accolade is only given to the very best products – the things you can't live without.

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Deputy editor: Owain Bennallack
Art editor: Simon Barnes
Acting production editor: Rod Lawton
Deputy art editor: Maria Wilson
CD-ROM editor: Graham Barlow
Staff writer: Graham Southorn
Technical editor: Mat Broomfield
Games editor: Mark Ramshaw
Futurenet site editor: David Sikk
Contributors: Jon Billington, Tim Cant, Angela Carter, Alex Cox, Steve Dent, Paul Dias, Mark Donald, Jonathan Eves, Steve Owen, Simon Pickstock, Gary Tipp.
Advertising manager: Julia Carter
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Marketing (subs): Simon Steele
Publicity & PR: Liz Ramsay & Jenny Press
☎ 0171 331 3920
Promotions manager: Tamara Ward
For all Licensing Enquiries regarding PC REVIEW, please contact Mark Williams
☎ 0171 331 3920
Fax: 0171 447 3499
e-mail: mwilliams@pne.co.uk.
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PC REVIEW,

30 Monmouth Street,

Bath, BA1 2BW

☎ 01225 442244

fax: 01225 732275

email: pcreview@futurenet.co.uk



An audience with...

Jon Ritman

Programming legend and creator of the original home computer footie classic, this is the man who doesn't need polygons.

Having carved a reputation as one of the country's premier game designers and programmers in the 80s, Jon Ritman did time at Domark before going on to co-found Cranberry Source in 1995. The development team now employs some 25 people, and has just completed its first title, *QAD*. Here Jon discusses the quintessential art of destruction and his love of sprouts.

Before we start, what the hell does QAD stand for anyway?

Aha! It's the *Quintessential Art of Destruction*.

Right, glad we've cleared that up at the start. Now QAD is a game with a resolutely simple concept beneath all the flash trimmings – are you a believer in the theory that simple is best?

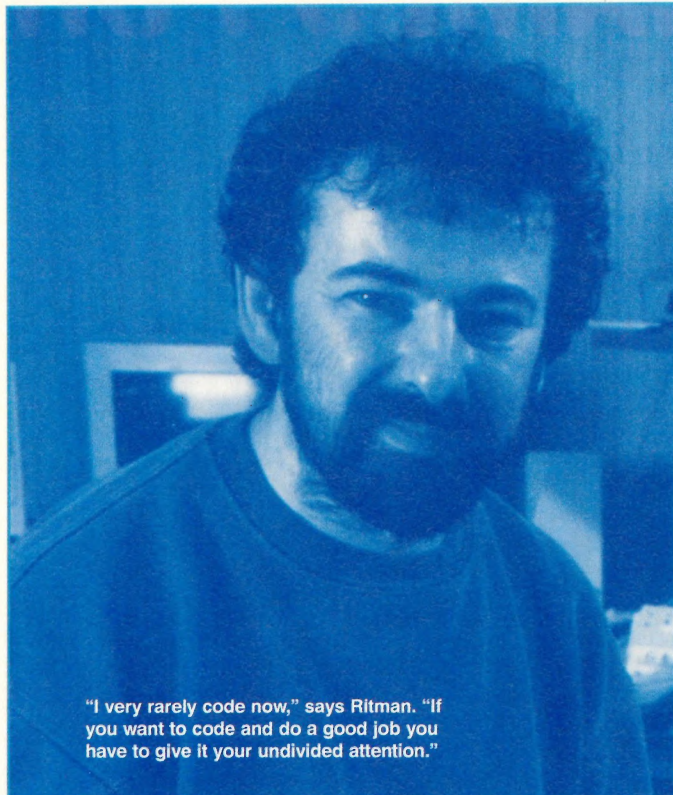
Not necessarily, though *QAD* is a fairly simple concept – although there is a twist to the game's structure. It's funny because I put together the design, and people started describing it as an update of *Choplifter* and several other games – all of which I'd heard of, but none of which I'd actually played. The main two differences between this and *Choplifter* are that, rather than land to collect hostages directly, players carry a pod that's dropped then collected again. But the pods don't belong to anybody, so the other player can steal them. And even once the rescued hostages have been transported to a base, the opponent can still get at them.

Much has been made of the fact that the game eschews polygon objects in favour of polar sprouts. What the hell are they?

Although it's a jokey name, it does accurately describe how they work. It's basically a voxel-type system, as used in games like *Comanche*, but applied to a single model rather than a landscape.

But why use them?

There are a number of advantages with it as opposed to a standard polygon system. With a polygon system your artists are limited by the number of polygons they can use, whereas with polar sprouts the original models are designed using



"I very rarely code now," says Ritman. "If you want to code and do a good job you have to give it your undivided attention."

polygons, but the object itself doesn't use them. It can be the most complex shape possible when it's created in *3D Studio*, but it will display on the screen just as fast as a cube.

So are you allowed to tell us your secret?

The process also features a mip-mapping procedure, which means we produce smaller versions of the same model to use as it gets further away on screen. It means the detail remains very good, and also means polar sprouts in the distance are even quicker (unlike polygon objects). It's the difference between what id did with *Doom* and *Quake*. *Quake* looks great, but by using polygon monsters they can't throw enough at the player, and so the game just isn't scary.

Isn't there the danger that faster processors and 3D cards will make it possible to achieve similar results with real polygons?

Oh, of course they will in the long run. In fact we already have an update to polar sprouts called SCIMs (surface contoured interpolated models). It gives a model not dissimilar to a polar sprout, with the addition of real-time lighting. The thing is, I've

always been a bit conservative about the equipment I'm producing for. I'm aware that success depends on how many people will play my game. We will produce things that don't need accelerator cards until everybody has got one. Saying that, our senior programmer came in to work the other day and said he's thought of a polygon engine system that'll be ten times faster than anybody else's – 20 to 30 times on an MMX machine. We'll see as it's developed whether the reality lives up to the theory.

Many were surprised when you took up MicroProse's canned *Citizens* game.

Myself and John Cook (ex-journalist and co-founder of Cranberry) thought it was a very nice concept, and one that represented a whole new genre. Also, we figured it was very close to finished, and so thought we weren't taking on that big a job. But once we started on it I found loads of things that just broke up the gameplay. We've ended up re-writing the entire AI system, which means the job is going to be much, much larger than we thought. There's even the possibility that we might decide that's not worth publishing.

So do you stand by your decision?

It was a low risk strategy, and I think it was worth it to get an interesting idea in. I wouldn't do it normally, though. Cranberry is really a place for the development of my ideas. I hate to say it because it sounds so bloody arrogant, but most people who do it for a living are crap at games design. And of course I think I'm brilliant!

SHOUT FOR SPROUTS!

With luck, you'll be able to buy Jon Ritman's *QAD* at your local software emporium next month. Philips, however, has agreed to offer ten lucky PC REVIEW readers the chance to forego the formality of handing over cash. To be in with a chance of winning a free *QAD*, just answer this question: What is the principal vitamin destroyed when you boil Brussel Sprouts? Answers by 29 April, 1997 please. The first 10 postcards to be plucked win a prize. Send the postcard to:
Shout for Sprouts, PC REVIEW, Future Publishing, 30 Monmouth Street, Bath, BA1 2DL.



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NEWS

GAMES FOR RENT

Soon you'll be able to rent PC games

PLAYER IN BRIEF

A SHOCKER

If you liked *The Web*, you've got to see *Timeshock!* Created as if it were a real table, *Timeshock!* promises to be the most realistic pinball game ever made. It's even got an operator's menu that allows you to get inside the machine as if you were a pinball mechanic. It will be published by Empire, and is out in May.

INSUBSTANTIAL

Sub Culture is about to bob up in a store near you. With Bullfrog abandoning its aquatic *Creation* title, Criterion Studio's strange mix of peace-making, trading and exploration looks certain to rule the waves. You play a tiny sea-dwelling prospector who's family is wiped out by a discarded tin can. What other game boasts a plot like that?



COWBOY CAPERS

If you spent too long watching *Bonanza* in your youth, you'll love *Outlaws* from LucasArts. Ostensibly a first-person adventure, there's enough Clint-meets-Lorne-Greene animation packed into *Outlaws* to fill a Saturday morning cartoon slot. It rolls into town this month.

A JEDI FRIGHT

Also from LucasArts comes the *Yoda Stories*. Following in the footsteps of *Indiana Jones: Desktop Adventures*, it features a random world generator that creates unlimited games. As Luke Skywalker, you begin each game by crashing your X-Wing in the swamps of Dagobah.

FEWEST EVER COLOURS!

Myst meets Marlowe in 1940s LA would be one way of describing *Noir*, a new point-and-click adventure from Codemasters. Black and white and proud of it, it sees you investigating the disappearance of Jack Slayton, PI. Your only clues are six unsolved cases that he left when he vanished. It's out next month.

PC gamers can now play the very latest releases at home without buying them outright, thanks to a new rental system launched in late March.

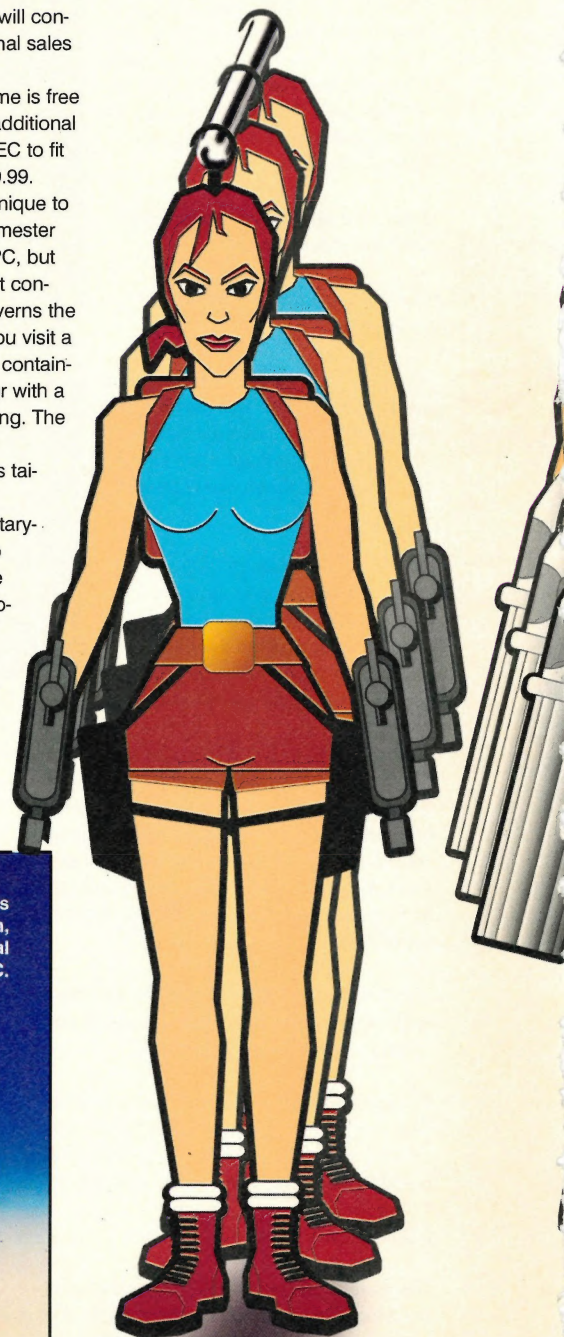
Membership of the Gamester scheme is free, and enables you to hire software from local shops for a minimum of three days up to lifetime rental. Prices start at £1.99 and rise to the game's full price, depending on the loan period and the title you want. Each rental bill is deducted from the game's final cost, so you can eventually buy a Gamester title by simply renting it sufficient times. The first games available will include hits such as *Rally Championship*, *Tunnel B1* and *Worms United*, plus classics like *Dune II*. Many more look set to come, since the UK's leading publishers, including Ocean, Psygnosis and Europress, have all signed up.

"With our system everyone wins," explains Melih Abdulhayoglu, Managing Director of Gamester Multimedia. "The consumer gets to try all manner of games at affordable prices, the retailer can offer a wide variety of software without taking any stock risk and the publisher can tap into a

new stream of revenue which will continue to flow long after traditional sales have dried up."

While the Gamester scheme is free to join, you'll need to buy an additional hardware add-on called a SMEC to fit inside your PC. This costs £19.99. Once installed, the SMEC is unique to your computer and allows Gamester games to be played on your PC, but not on non-SMEC machines. It contains a built-in clock which governs the game's rental period. When you visit a rental shop, you receive a CD containing most of the game, together with a floppy disk generated on renting. The CD cannot be run without the accompanying floppy, which is tailored to match your SMEC.

The SMEC contains a military-standard encryption system to ensure that protected software may be freely copied by distributors while preventing illegal counterfeiting. Gamester boasts that even with a super-computer, it would take some 63 billion years to crack the encryption. This sort of security, together with support from publishers and





Software Pushers

You might not even have to pop down to your local shop to rent games soon, if a new method for distributing software via the Internet proves successful. Launched in January, McAfee's Home SecureCast system automatically provides subscribers with its anti-virus software, and supplies updates as they become available. It's the first system to deliver software by utilising new Internet 'push' technology, which establishes a broadcast channel to send files directly to your PC over the Internet. To subscribe, you must first manually download a piece of software *BackWeb* from McAfee's Web site, and then specify how frequently you wish to receive updates. McAfee's Web site address is <http://www.mcafee.com/>

retailers, might see Gamester succeeding where other rental schemes failed.

To begin with, games will be available for rental at 250 specially-equipped stores in the UK, but that number is expected to rise to 500 within six months. To promote the scheme, £20 worth of rental vouchers will be included with new SMECs, and the hardware will also be given away with some full-priced games. In future, the data encoded on a floppy disc may be distributed via the Internet.

Gamester's potential for recouping revenue lost through piracy might also make the system an attractive one for publishers of non-gaming software. On top of the initial range of 220 games, an accompanying service called Curricula will supply educational titles and Gamester eventually plans to offer office software too. (GS)

EXPLORER INVESTIGATED

Security loopholes in Microsoft's Internet Explorer

Microsoft® Internet Explorer e

Last month saw the discovery of a succession of security loopholes in the latest version of Microsoft's *Internet Explorer*. The software corporation responded quickly, offering patches on its Web site to fix the problem.

The first flaw, which was uncovered by three American polytechnic students and published on the *Cybersnot* Web site, theoretically enables a malicious Internet publisher to manipulate and delete files on the browser's host PC. The second was uncovered by a different set of students who were investigating the first flaw. In both cases the loopholes work by allowing a hacker to execute potentially damaging programs on your PC.

On uncovering the security issues, the students immediately alerted Microsoft and the Internet community. "We would like to commend Microsoft for making the fix available so quickly," said a spokesman for *Cybersnot*. "They are stepping up their bug report response teams and will soon be providing email addresses to send security-related bug reports for Internet Explorer – and perhaps all of their other products."

Microsoft has stressed that there are no reports of the security loophole being misused. But it might still affect the steady progress *Internet Explorer 3.0* has been making in capturing Netscape Navigator's market share.

The security upgrade patch is available from <http://www.microsoft.com/ie/security/download.htm>

Change your Family

Scanner-free photo editing comes to the PC

You can now take pictures and manipulate them on your PC without even owning a scanner, thanks to a new photo-manipulation kit from MGI Software.

The £19.99 MGI *PC PhotoStarter Kit* is supplied complete with a 12-exposure roll of Kodak film, plus a slimline version of its leading *PhotoSuite* software. You simply take your pictures and then send them in a special envelope to Kodak for processing. A few days later your negatives and prints are returned, as well as JPEG scans of all your pictures on a floppy disk. With a resolution of 700 x 600, they are perfect fodder for MGI's easy-to-use photo manipulation software.



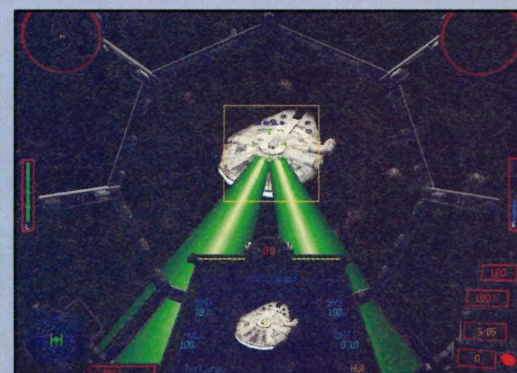
Here's are examples of the things you can do to a cow by using MGI's PC Photostarter kit.

"Photographic images are quickly replacing traditional clipart drawings in documents prepared with computers," says Markus Gunn, MGI's European Director. "The growth in high-quality scanners, printers, digital cameras and digital imaging services is providing everyone with the opportunity to edit photos on their PCs."

If you're hooked, you can then move on to the latest version of *PC PhotoSuite* for £49.99. Version eight comes with over 500 templates and 200 sample photos, plus full support for the new FlashPix photo format. We'll be reviewing the *PC PhotoStarter Kit* in an upcoming issue of PC REVIEW.

IN OUR SIGHTS: X-Wing vs TIE Fighter

We've been playing a Beta version all month, and it makes our job worthwhile. Due out next month, LucasArts' long awaited 3D *Star Wars* blaster takes off where its predecessor *TIE Fighter* left off. For the first time, you can fight with your friends in the *Star Wars* universe or else you can battle through over 50 stand-alone missions to save or enslave the galaxy. Boasting a completely overhauled graphics engine and new texture-mapped ship models (including everything from A-Wings to Star Destroyers), *X-Wing vs TIE Fighter* will rival the actual films when they're re-released this summer. It could well be huge – we'll tell you for sure in our full review next month.





MULTIMEDIA IN BRIEF

A WORLD OF KNOWLEDGE

The 1997 edition of *Webster's World Encyclopedia* has just been released. It includes a World Atlas with summaries, statistical facts and digital maps for every country in the world. It also includes *The Cambridge Encyclopedia* and is available from Ransom Publishing, at £34.99.

BATTLING ON

Compton's *Battles of the World*, priced at £24.99, makes learning how the battle of Kaiserschlacht was won as easy as pulling a trigger. It includes nearly 3000 articles on military history, plus period music and 3D animation. If that isn't enough, you can also watch animated re-enactments of ten significant historical battles, from Kadesh in 1275 to the Gulf War in 1991.

ANCIENT EGYPT

If you're heading to warmer climes this summer, you could well be tempted to visit Egypt to see the Great Pyramid and The Sphinx. A cheaper multimedia alternative is *Egypt*, the new CD-ROM from Interactive Ideas. It's packed full of pictures and even includes the voice of the legendary explorer Howard Carter.

TO BE OR NOT TO BE ON PC

Shakespeare fans not content with sitting through Kenneth Branagh's four-hour silver screen version of *Hamlet* can now enjoy the performances of Kate Winslet and Billy Crystal et al all over again in a CD-ROM game. Numerous excerpts from the film are included in *Hamlet*, which is set in a 3D Elsinore Palace.



Kate Winslet. Star of film, star of CD.

GOLF MASTERS

The Masters CD-ROM, published by Focus Multimedia at £9.99, could just turn out to be the perfect companion to the upcoming 62nd annual Masters Golf tournament on TV. It contains 3D animation showing the contours around each green plus player profiles, and video footage. Incidentally, don't miss our review of *David Leadbetter's Golf Academy* over on page 83.

DOUBLE THE TROUBLE?

Confusion over new 56Kbps modems

The launch of new modems capable of running at speeds of up to 56Kbps will enable you to download text and pictures from the Web faster than ever before. But before you buy, you should make sure your service provider has installed compatible hardware. If it hasn't, you might find your connection won't operate any faster than it does now.

Further complicating the issue is the existence of two competing technologies. Modem manufacturer US Robotics is forging a lone path with its x2 technology, while an alliance of Motorola, Rockwell, Lucent, and Ascend have developed the rival K56Flex. So far a number of major providers including CompuServe, AOL, and Netcom have pledged to support x2, while BT Internet will definitely install modems compatible with the Motorola standard.

The competition between specifications has been caused by rapid advances in modem technology. Up until now, modem

specifications conformed to industry standards, but this time the hardware was ready before the standard was agreed upon. At present, the new Motorola modems are ready to run at 56Kbps. In addition, Motorola's Tidal Wave program offers existing owners of its 28.8k and 33.6Kbps modems the chance to upgrade to the 56Kbps

speed. The company also guarantees its users will be able to upgrade to an industry standard 56Kbps, when one is eventually agreed. In contrast, to run US Robotics x2 you'll need an upgrade to Sportster Flash.

Another hidden drawback to modems labelled as running at 56Kbps is that they only operate at that speed when downloading data, by taking advantage of digital switches in the telephone network.

That means the 56Kbps speed won't work if you are not connected to a digital exchange. Noisy telephone

lines make it even more unlikely that 56Kbps speeds will be consistently achieved in practice.



Motorola's new 56Kbps modems enable quicker downloading of Web pages. Check if your service provider is installing compatible equipment.

Modems on a Disc

Some modems can be upgraded to higher speeds with extra hardware, called Flash ROM. But manufacturers like Motorola are working on software upgrades, which means you would no longer have to throw your modem away every 12 months or so. These so-called Soft Modems work with just a simple modem box, fitted out with only the most essential communications hardware. The hard work, like compressing data, selecting transmission speeds, and noise correction, is all performed by the computer's processor. Soft Modems are made possible by the increasing power of PCs – Motorola claims they'll already work on 150MHz Pentiums to a level enabling email and Internet access.

WINDOWS CE GOES ROBOTIC

Microsoft has announced that it plans to broaden the deployment of its Windows CE operating system. Originally designed for palmtop computers, the firm is pushing the technology in several new directions, including robotics and consumer appliances. This means factory robots of the future may be embedded with the CE operating system, as could toasters, blenders and washing machines. The company claims Windows can be integrated with hundreds of thousands of electrical items.

Football hits the net?

Terraces like Anfield's Kop have already been consigned to history. But soon the stadia themselves will be under threat, if new two new computer approaches hit the target.

Firstly, Leeds United FC plans to broadcast full motion video coverage over the Web of all their home league matches, plus Coca Cola and FA Cup ties.

The transmissions will be made using Progressive Networks' Real Video technology, which should ensure watchable, if jittery, pictures over a 28.8kbps modem link. Although prices have yet to be announced, the service is likely to cost subscribers a hefty £10 or £15 per match.



Lee Sharpe will hope to hit the target for Leeds United when they begin live match broadcasts over the Internet.

Despite such technological advances, refereeing standards are unlikely to improve. That's where virtual reality software by Israeli company Orad could help. It analyses action on the pitch and constructs a computer-graphics simulation that can be viewed from any angle. Currently under test by satellite broadcaster BSkyB, the software can inform a television pundit if a striker actually was offside, or if the defending really was sloppy.

One day then, you'll be able to watch both the match and a virtual counterpart at the same time. Maybe you'll even be able to shout 'He's been doing it all afternoon' via the Internet. But of course the stadium will be empty...



TV on your PC

Gates wants to change your living room forever

You could soon be watching television programmes, reading multimedia magazines, and browsing Internet pages sent direct to your PC, thanks to new technology from Microsoft which enables PCs to receive television broadcasts.

The technology builds on Microsoft's concept of the Simply Interactive PC (SIPC), which will make computers more interactive and easier to use. Recently outlined to over 50 companies in the electronics, television and computing industries, new products and services based on the concept are expected before the year is out. For example, the technology enables subscribers to the US digital satellite broadcaster DIRECTV to customise the TV entertainment they receive through a satellite dish and decoder box. In addition, DIRECTV will broadcast selected Internet pages, and other multimedia information alongside its video broadcasts. Software can be transmitted too, with files taking just seconds to download.

All this additional data is unlikely to persuade viewers to sit in front of a PC monitor rather than a TV screen. Microsoft has recognised this too and plans to extend the Windows interface to make it suitable for large screen displays viewed from a sofa. The interface can then be controlled with a remote control device.

"The combination of home PCs with mainstream home entertainment appliances has been a long-term objective for the PC industry," says Anne Mitchard, Marketing Manager of Microsoft's Desktop Systems Division. "Until now, all parties have been hamstrung by a lack of communication tools to enable the use of large screens."

The Simply Interactive PC framework was first unveiled by Microsoft's Chairman and CEO, Bill Gates, in



Laughing: Bill Gates hopes Microsoft's Simply Interactive PC will be a doddle to operate. It will tempt fate by coming in a sealed casing.

April last year. It should eventually give your PC total control over entertainment and communications in the home, by connecting with stereos, video recorders and TVs. How you access the Internet is also set to change. The new broadcast technology means Web pages will be sent directly, rather than being selected for downloading. This in turn will enable interactive magazines and journals to charge a subscription fee via a secure payment system.

Microsoft claims the Simply Interactive PC could be contained within a sealed case that would never need to be opened (even to add new devices). According to Gates, it will make home computers much more attractive to the buying public.

"While the PC is easier to use today, we should not be satisfied," he said recently. "SIPC technologies will

make the PC as easy and convenient to use as any other home appliance."



Windows in your front room. Menus are big enough to be seen from the sofa, and controlled remotely.

BOOKMARK

There's more to art on the Web than reproductions of Constable or Pamela Anderson...

ART FUTURA

Held in Madrid this year, Art Futura is an annual show concerned with futuristic concepts like robot art and computer graphics.

<http://www.ciberteca.es/artfutura>

JAPANESE ART AND WESTERN INFLUENCE

Oriental art with a western twist, including water colours, lacquer boxes and porcelain.

<http://www.euronet.nl/users/artnrv/Japart.index.html>

DON KIRSCHNER'S FOOD ART STONE SCULPTURES

Don carves stones to construct strawberry sundaes, hamburgers, fries, and other feasts.

<http://members.aol.com/bnoid2/DKHome.html>

THE LONDON ART MARKET

Art lovers can order contemporary paintings and old masters on-line from the London Art Market, if they've at least £1000 to spare.

<http://www.demon.co.uk/artlondon>

LE MUSEE IMAGINAIRE

Join poor people like La Toya Jackson, Roger Moore and Sofia Loren in buying an expert fake of an old master.

<http://www.museeimaginaire.it/>

Directory

Watch for the new look .net Directory - out soon.



THE HOME OF THE FUTURE

In future, the Simply Interactive PC and related technology might control all the TVs, video and sound systems scattered throughout your home. Enhanced sound will be processed and driven from the PC and played through your stereo, while DVD players will facilitate perfect video playback. Get your blue-prints for tomorrow by reading our massive investigation, The Home of the Future, in next month's issue. For more on DVD, meanwhile, see page 35.

Reds on the Run

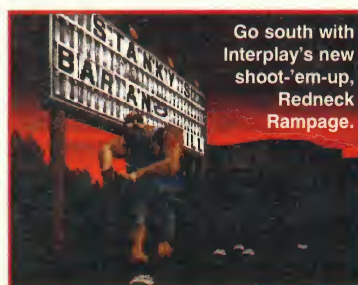
Shoot white trash in trailer parks

They gave us the Ku Klux Klan and the Dukes of Hazzard, so give them some buckshot scatterback in return. Yes, Interplay's new first-person shooter, *Redneck Rampage*, stars farmyards full of hillbillies for blood-thirsty enjoyment.

Created with the *Duke Nukem 3D* engine, *Redneck Rampage* is a game with its tongue squarely in somebody else's cheek. Aliens have abducted your prize pig and cloned most of the folk in Hickston, Arkansas. Armed with just a crow bar, a double-barrelled shotgun, sticks of dynamite, bear traps, a ripsaw gun and alien weapons, you've got to fight through SVGA incarnations of country bars and trailer parks, all chock full of 3D rendered good old boys.

What makes *Redneck Rampage* really stand out is a refreshing sense of

humour. Drink some whisky and you'll get your health back but you'll also lose your aim. Eat too much food and you'll develop a pot-belly, which might slow you down on later levels. It's even got a soundtrack featuring top psychobilly band, The Reverend Horton Heat. It's out next month, so don't miss our review next issue.



Go south with Interplay's new shoot-'em-up, *Redneck Rampage*.



THE WORKS IN BRIEF

STUCK UP

Burning your own CDs is a boon, but decorating all those anonymous gold discs with a marker is a pain. Now NEATO, the CD labelling specialists, has released CD-Face. It's a graphics package that lets you create stylish circular images, which you can then apply with NEATO's label applicator. It costs around £30.



BUILD BETTER SITES

If you're creating Web sites, check out PageMill 2.0, the latest version of Adobe's award-winning Web authoring software. It's been extensively reworked for the addition of audio and video to your pages. A Beta version is available for download at www.adobe.com.

FLOATING BOOKSTORE

The Internet Bookstore, the world's second largest Net bookshop, is to be floated on the stock exchange. The Oxford-based company offers nearly a million titles from its store at www.bookshop.co.uk. If you fancy a flutter, pick up a prospectus at the Web site.

BUDGET SPEAKERS

LSL has launched a new speaker system aimed at those who need multimedia on a tight budget. The wide range, bass reflex MMS-702 offers 15w PMPO with extra bass control. "It's probably the most powerful speaker in its class," says LSL's Paul Bigley. It costs just £24.99.



PC FOR THE HOME

Check out Compaq's new Presario 2110. The matt-black machine comes with a Cyrix P133 processor, 16Mb RAM, and a 2Gb hard drive as well as monitor, modem and an eight speed CD drive for the princely sum of £1099. In addition, all new Presario customers can buy the Apocalypse 3D card for just £155.

ERRATA

In Issue 65 of PC REVIEW, we printed an incorrect price for Softwood's *Final Writer*. The correct price is £19.95. For more information on any of Softwood's products, call the company on 01773 836781.

Surrounded by sound

Virtual Surround Sound comes to your PC

The heavy-breathing grunts in *Quake* are scary enough already. But soon you'll be able to hear a game's monsters creeping up behind you, even if you've only got two speakers.

Virtual Surround, a new technique from Dolby Laboratories, simulates the effect of five loudspeakers but requires only two. It's made possible by the way computer users sit straight in front of the left and right speakers. Virtual Surround goes a step beyond conventional

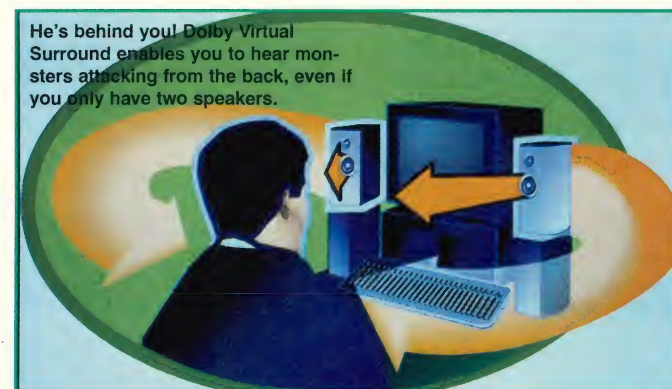
Pro Logic because it enables computer users to hear effects moving in real time in response to action on the screen.

At present you can only hear Dolby Virtual Surround with the aid of additional hardware to interpret the signal. Altec Lansing's ACS410 speakers, for instance, offer a complete solution. Alternatively, if you already own a good set of speakers then SSI's Surround Sound decoder card will do the job, although it needs an additional

plug-in card to communicate with an existing sound card. But since Virtual Surround is purely a mathematical process, it could eventually be built directly into soundcards, CPUs or even Windows.

As well as including a Dolby decoder somewhere in your system, you'll need to be running specially-written software for the surround effect to work. But as Virtual Surround merely interprets an existing Dolby Pro Logic surround sound signal, it works with any Pro Logic-compatible games already on the market, including *Descent II* from Interplay and Electronic Arts' *Wing Commander IV*. A number of other manufacturers are also developing games for use with Virtual Surround, including Ocean, Psygnosis, Sony, Nova Logic, and Prolific Publishing.

High quality sound for PCs won't end with virtual surround. Dolby Digital is an even better system, which employs 5.1 channels of sound. It will soon be used to playback sound from DVDs and over the Internet.



How does Virtual Dolby Surround work?

Dolby's Virtual Surround system for PCs uses just two loudspeakers to reproduce the sounds made by five with a Pro Logic home cinema. It takes the Pro Logic signal then performs 3D signal processing on the central and side sound channels. Sound for the centre speaker is split between left and right, making it appear to come from in front of the listener, while so-called phantom side speakers recreate the spatial effects usually achieved by the extra three speakers.

THE WAR TO END ALL WARS RELIVED

The events of July 1914 led to the outbreak of World War I. Now, YITM is giving you the chance to live through that month yourself on 30 June 1997.

Dubbed the world's first Interactive History Day, 30 June will give you the chance to watch the events of July 1914 unfurl before your eyes via an on-line news service. It will be updated as the day progresses, so at mid-



day peace might still seem a possibility, but by evening a darkness will really have settled across Europe. There will be on-line discussions, guest contributors and even the chance to create a contemporary newspaper. Point your browser at <http://www.yitm.com/yitm/ww1> in order to register.

Find out what caused the terrible tragedy of World War I.

THE CHARTS

Top 10 selling PC CD-ROMs

- 1 (-) Command & Conquer: Red Alert
- 2 (3) Tomb Raider
- 3 (2) FIFA 97
- 4 (4) Champ Manager 2
- 5 (5) Flight Sim 6.0
- 6 (-) Magic: The Gathering
- 7 (-) Scourge of Amargon
- 8 (-) Total Instanity
- 9 (-) Formula 1 Grand Prix 2
- 10 (-) Phantasmagoria 2



New in the office

Ever wondered what kind of PCs we use at PC REVIEW for all the software testing we do? Well, we've got a bank of machines including a 486, P90 and P133. This month, however, we've added to our hardware collection with a gorgeous new P100 from Mertec, a company that custom builds PCs in South Wales. On board are 32Mb RAM, a 1.6Gb hard disk, an eight speed CD drive, a Sound Blaster AWE32 and ATI 3D Xpression graphics card. On top sits a 17-inch monitor.

Only a P100? Yes, but while that might sound a little slow, we got this one in specifically so we could upgrade it to a P166 by installing an Intel Pentium OverDrive with MMX technology. To find out exactly how we did it, turn to page 111. To try and win your own MMX chip, see our competition on page 122.

If you fancy a brand new PC like ours, you could do worse than phone Mertec on 01792 772111.



COMPETITION RESULTS

Have you got something for nothing?

SONY YAROZE

A Sony Yaroze was the prize in our February competition, in which we asked you to describe the PlayStation game you'd like to develop. The winner was **Mark Swan** from London. In his game, Mutate, players battle germs and bacteria in a dirty kitchen.

parison' with an Epson printer to win our January coverdisc competition.

KEY TRONIC

WIRELESS TOUCH-PAD KEYBOARD

Finally, around Christmas time we asked who released *Touch Me* as a single. These ten readers will receive a belated yuletide surprise (well, a Wireless keyboard) for correctly telling us it was Sam Fox.

Paul Allard, Leicester;

Scott Mitchell, Lincoln

Mr G Yates, Chorley

A Best, Halesowen

Claire Alford,

Southampton

S McLeod, Prestwich

Jon Roach, Aylesbury

Mike Holden,

Broadstairs

Mrs D Lally,

Chelmsford

D Shaw, York

VIVITAR VIDEO PHONE

Colin Beale from Staplehurst and **Doug**

Youlden from Telford

will now be able to chat

face to face with family

overseas, using the

Vivitar video phones

they won in our

January competition.

EPSON STYLUS

COLOR 500 PRINTER

G Edwards from

Stafford stated correctly

that 'There is no com-



YOUR FIRST LOOK AT: MOTO RACER

You're looking at the future of biking. When Electronic Arts brought down a nearly complete version of its latest throbbing racer we were astounded. In fact, we had to put work on hold while everyone in the office had a go. For the sake of realism, EA has teamed up with Suzuki to get the bike and track dynamics right. The relationship is now so close that EA is to sponsor the Suzuki team. *Moto Racer's* out in May, but we'll bring you a full review in our next issue.

AN UNUSUAL SUSPECT



LC40 (TX-D4L131) - Face: unlike the competition, the Suspect offers full screen video without black borders in all video modes.

Although it's really aimed at financial institutions and other corporate users, its 75Mhz refresh rate would make it ideal for Windows 95 and adventure games. We can only dream.

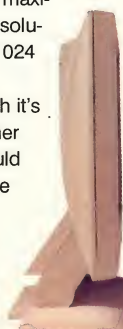
LC40 (TX-D4L131) - profile: the Suspect's distinctive lean visage is clearly on view. If you see it, approach with caution.

What could be more desirable than the new PANAFAT Suspect LC40? A new car? At over £2900, you'll have to like the Panasonic's new flat screen monitor an awful lot to see it sitting above your PC.

Only a couple of inches thick, the 14-inch TFT matrix LCD panel

offers a maximum resolution of 1024 x 768.

Although it's



METATOOLS CLEANS UP

Metatools has just announced its second high-powered, low-priced creativity package. Following the success of its morphing program *Power Goo*, *Soap* will enable anyone to edit and clean-up photos on their PC.

Like its predecessor, *Soap* offers professional quality effect in the guise of easy-to-use tools. "With *Soap*, MetaTools will offer very complex mathematics under the guise of fun and ease," says Kai Krause, MetaTools Co-Founder and Science Officer. "Soon you'll be able to remove scars and scratches with a one-step special tool - a feature not previously available at any price in software of this type." This is just one example of the capabilities of *Soap*, which should cost around £50 when it's released this summer.



As well as *Soap*, MetaTools is now offering an MMX-enabled version of *Goo*. It will be bundled with some new MMX machines.

NEWS CONTACTS

BSkyB	0171 705 3000
Codemasters	01926 814132
Compaq	0181 3323000
Dolby	01793 842100
Emme Interactive	33145 615430
Focus Multimedia	01889 570156
Gamester	01274 730 373
Interactive Ideas	0181 805 1000
Internet Bookstore	01865 771772
Interplay	01628 487758
Liris Interactive	0171 631 0878
LSL	0800 9800575
McAfee	01344 304730
Mertec	01792 772111
MGi	www.mgisoft.com
Microsoft	0345 002000
NEATO	0181 932 0540
Ransom Publishing	01491 613 711
The Learning Company	0181 246 4000
Videologic	01923 260511



BLOWING AWAY THE COMPETITION



G-NOME

G-NOME pushes real-time 3-D simulation over the edge. Experience the terror of being chased on foot by a four-storey HAWC. Feel the adrenaline rush as you turn and face the armoured giant.

MULTI-PLAYER, MODEM, NETWORK & INTERNET READY!

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(keyword: SEVENTH) or the web (www.7thlevel.com)

7th LEVEL®

SETTING THE STANDARDS



	G-NOME	MERCENARIES	EARTHSEIGE 2
GRAPHIC RESOLUTION	SUPERIOR	OK	OK
PATROL ON FOOT	✓	✗	✗
ENTER BUILDINGS & GUARD TOWERS	✓	✗	✗
CHANGE HAWC'S DURING A MISSION	✓	✗	✗
EJECT ENEMY PLAYERS FROM THEIR HAWC	✓	✗	✗
CROSS-TALK WITH YOUR WINGMAN	✓	✗	✗
MISSILE-CAM	✓	✗	✗
USER GUIDED MISSILE	✓	✗	✗
REAL-TIME DAMAGE DISPLAY	✓	✗	✗
VEHICLES DISPLAY MULTIPLE LEVELS OF DAMAGE, RIGHT DOWN TO THE LAST BODY PART	✓	✗	✗
MULTI-PLAYER READY	✓	✓	✗
PANNING STEREO SOUND	✓	✗	✗

G-NOME



The artificial intelligence in the players means they'll actually line up in a wall to defend free kicks.

The latest update of Actua Soccer will be with us next month. We reveal just what sort of sporting action it holds in store...

For some footie fans, *Actua Soccer* was a disgrace. *Euro 96* was too. Sure, they were great-looking and brought to you in fantastic, motion captured 3D. And they played a pretty mean game of football too – particularly *Euro 96*.

The trouble is, most footie fans support clubs and while it was nice to control Romario in *Actua*, or take England to the Euro 96 glory denied them by Southgate's penalty miss, the greatest thrill of all surely must be to guide your team – the one you support – to the top of the Premiership.

Thankfully, Gremlin has decided to remedy the situation by releasing the long-awaited *Actua Club Edition*. After a lifetime of playing international football, that *Actua* engine is coming home. Liverpool fans will be able to control Barnes, McManaman, Collymore and Fowler as they link up to ultimately slot the ball past Ogrizovic. Chelsea fans will delight in the flair of the club's Italian contingency. Man U fans, meanwhile, can do, um, whatever it is Man U fans do.

As with *Actua Soccer* and *Euro 96*, *Match of the Day's* Barry Davies will be

making his return to do the play-by-play commentary. Not only has he been on the mic getting all excited about Premier League players, he's even done some commentating on star men in the Nationwide League who might just be bought by Premiership teams.

Indeed, Gremlin's *Actua* producer, Tony Casson, is keen to cover all the options. Should some Wolves or Bolton likely lads be drafted into the top flight, the *Actua* team will be ready to implement them. The aim is to have the squads in the game exactly as they are in real life on the day of release.

What happened to the other 93 Premier Managers?

Continuing the *Actua*-isation of everything that exists, Gremlin is about to put *Premier Manager* under the *Actua* brand. *Premier Manager 97*, the fourth in the *Manager* series, is the first written specifically for the PC.

Premier Manager 97 promises an overhaul of the *PM* series (which kicked off in the early 80s with a game sent to Gremlin by a first-time programmer). Unlike *Premier Manager 1, 2 and 3*, this time Gremlin has purchased the game engine and all the football statistics and trivia from a Spanish developer, Dynamic Software. Apparently, its *PC Futbol 5.0* is quite the thing in Spain – it's even sold in newsagents over there. *PC Futbol* sold more than 300,000 copies in its first month on sale earlier this year. Astounding.

Gremlin's input wasn't just limited to changing the name. For a start, all the Spaniards had to be replaced by British players to avoid obvious confusions. And a bit of aftertouch ensured the game fitted in with the rest of the *Premier Manager* series. An extra multimedia supplement was created, too, which includes anecdotes on every player in the league and Barry Davies was brought in to do the commentary. Again.



We've spent a little time living the tabloid-fodder life of a top League manager with an early version of the game and its looking great. And *Premier Manager 97* is such a better name than *PC Futbol 5.0*, isn't it? Dynamic was lucky to get paid at all.

Premier Manager 97 goes on sale later this month, just in time to top fill that hole at the end of the season.



Can Liverpool's Thomas finally break down the Spurs defence to get one in the net? He probably could in real life.



The keepers in *Actua* and *Euro 96* always looked quite good and they make their return for *Club Edition*.



A great shot by a great player in a great stadium. The eight grounds used for Euro 96 are used again in Club Edition including St James' Park, Anfield, Hillsborough and Villa Park. For teams whose stadia weren't created for that game there is still a rather grand default stadium.

Profiles of every player on each team can be viewed through *Actua Club Edition's* new front end. Whereas once you'd get to see generic 3D rendered players slowly spinning around in *Euro 96's* player selection screen, with *Club Edition* you'll get to look at mugshots of the players. Just like in those Premier League sticker books. What's more, there are factfiles on each club quoting statistics such as the capacity of their home grounds and locations of club shops. Just the sort of thing programme-buying Stattons require.

In-keeping with the game's sim character, on top of the on-the-pitch Saturday afternoon action, there's a bit of a management side to it as well. Gremlin's Andy Casson elaborates: "The management side's there in as much as you've got the whole squad to choose from. You have to pick your best team and your players will get injured throughout the season so you have to keep checking the stats to make sure they're up to playing. There are suspensions, and you'll have to do tactical things like rest players for big games." You won't however, be able to transfer players.

On the other hand, graphics-conscious players will be pleased to know that Gremlin will be releasing 3D graphics accelerator patches for the game. "We'll probably be supporting as many cards as it is possible to do. I imagine 3DFX will be one we'll probably

do. We certainly did it with *Actua Soccer* and it's been very successful, so they're in the pipeline," explains Casson.

The big question, however, is how different *Actua Club Edition* will be from its predecessors, *Actua Soccer* and *Euro 96*. Well, in almost every respect it's not that different at all. We put the tough question to Tony Casson and this is what he said: "It's different from playing the first *Actua Soccer*

because we made some tweaks for the *Euro 96* game, which obviously had a speed burst button in it and we fiddled some of the logic so it does play a lot better than the original *Actua Soccer*. The basic difference between this and *Euro 96* is that there are club teams in it.

"Now, the game will be going out at mid-price so it's basically an update of the *Euro 96* engine with club teams," continues Casson. "Some people won't want to buy it, and that's fair enough, but I think a lot of people would want to play *Euro 96* with club teams. It certainly makes a big difference for me playing as Derby, rather than Argentina or something. You seem to get a lot more behind it and you can empathise with the players a lot more."

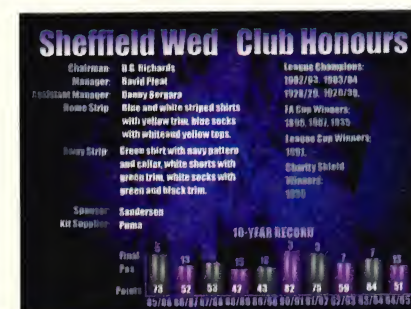
Certainly, a game that's just *Euro 96* with different teams and players won't be everybody's Dean Holdsworth, Ian Wright or Ryan Giggs. If, however, you don't own *Euro 96*



Fancy photos and shots of home grounds appear in the new front end that has been created for *Actua Club Edition*. It's a moot point whether or not the players in the game will sport sponsorship logos.



During the intermission you can decide how to change your tactics while throwing teacups at the smiling faces of your players.



All kinds of information is available for each club, including a graph displaying their performance over the last ten years.

we think *Actua Club Edition* is something you should look out for. Gremlin will be pricing the game sensibly at around £20 and catering as best it can to supporters of Premier League clubs.

And if you have any doubt over the quality of the play on offer, all we can advise you to do is to get the next issue of PC REVIEW when we'll have a fully working demo of the game on our coverdisc, featuring a Charity Shield rematch: Newcastle v Manchester United.

Of course, that does leave followers of non-Premier League clubs like Wigan, Swindon, Sheffield United and Preston North End standing out on the unsheltered terraces. So perhaps one day Gremlin will even consider doing a club edition that takes in all the leagues in the country.

Maybe, though, the company will have even bigger plans. Naturally, we'll let you know as it happens. (GW)

IT'S OFFICIAL
Did we forget to mention the refs? Indeed not. The men in black (and purple-grey) deserve special mention, particularly after all the hubbub over that Chelsea penalty against Leicester in the FA Cup. All the proper Premiership referees will be included in *Actua Club Edition* and behave according to statistical data on their performances this season. Though Gremlin couldn't be drawn to comment on the stats in there for Mike Reed (who officiated in the Chelsea v Leicester clash), the company did assure us that the ref ratings would be as accurate as possible. A guide dog is being motion captured in Sheffield as we go to press.

NEXT MONTH
We'll have a playable demo of *Actua Club Edition* featuring the Charity Shield clash between Newcastle and Manchester United.

Camera action



Changing the camera angles means you can view your throw down the line as a close-up from above...

...or from further out. As with *Actua*, you can situate the camera anywhere you want within the ground.



RAPID

Work In Progress: Speedster

Having carved a name for itself with the 3D re-interpretation of the Lemmings formula, Clockwork Games is ready to take its art on the road.

There's a weird law governing the world of PC games development that somehow ensures several similarly themed games will appear practically simultaneously. It happens with soccer games, it happens with karting games, and now it's happening with overhead 3D racers. Mindscape is working on *Supersonic Racers*, Codemasters will soon bring us *Micro Machines 3*, and Merit is beaver away on *Hooters*. Psygnosis, meanwhile, has *Speedster*. But while this is a superficially similar effort, developer Clockwork has come at the genre from a different angle.

"The idea was to create a real racing game, but one with an overhead view," says Neil Holmes, the coder responsible for the PC version. The viewpoint may suggest fast thrills, but this is an arcade game tempered with authenticity. "One guy has worked on

the handling, while another has concentrated on the artificial intelligence. We've really gone all out to make it realistic, with computer drivers as intelligent as possible. They'll even respond to your driving tactics to the point that if you constantly ram them, they'll go out of their way to drive you off the road."

Although Clockwork worked with 3D for its *Lemmings* title, a brand new 3D system was built from scratch, enabling the designers to import full 'mesh' models of the race track from Soft Image design software. Neil: "It's a full 3D engine, including the tracks, the cars, everything." So, while the likes of *Screamer* and get away with putting flat trees at the roadside, every element of *Speedster* is being built to look solid.

The result is that the tracks are composed of between 11,000 and 14,000 rectangular polygons each. Such graphical com-

plexity becomes obvious when the player makes use of the adjustable viewpoint – another feature made possible with a true 3D system. "You can go from about a 45 degree view above the car to an overhead *Micro Machines* type view, and any position between the two," says Neil. "It's completely possible to select any viewpoint along that arc, unlike say *Sega Rally*, where there are four set views to switch between. We've found that players tend to choose the viewpoint to suit the course or the particular area of the track."

Interestingly, a rear view option has also been included, so you can instantly flick to a reverse overhead viewpoint, then back again. While it seems an odd addition to a game concerned with challenging track layouts and high performance driving, it proves quite useful for checking the position of

CAR WARS

Speedster features both high performance and 'heavy metal' vehicles. Each handles very differently, with understeer blighting some of the bigger beasts, and even tyre pressure coming into play.



Included in the line-up of sixteen vehicles are the usual round of sports models and hot hatchbacks.



Alternatively, others are more like this heavy goods vehicle, and there are cool jeepsters to pile around in too.



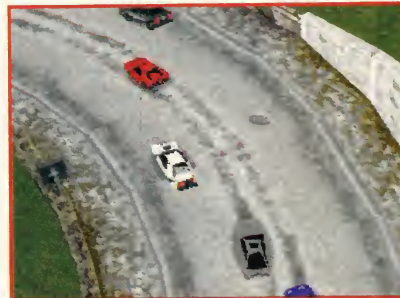
And it seems no modern racing game would be complete without its very own monster truck. So here it is.



The need for speed – Speedster promises all the realism of traditional 3D racers, but with that ultra-accessible choice of semi-overhead viewpoints.



The use of a real 3D engine and the unique viewpoint system make impressive images like this possible. As Clockwork's Neil Holmes says, "It allows us to restrict what the driver can and can't see. We can show large sections of San Francisco as they come over a hill, for instance."



opponents, and Clockwork is confident that gamers will find it a boon.

Because *Speedster* is going for an almost simulation-style feel, steering, suspension, and even the crashes are all mathematically calculated. Even clipping the edge of a vehicle can cause it to spin out of control, while different cars feel different. Even tyre pressures make a difference. Such attention to detail is maximised by including 16 cars to race, including 'heavy metal' vehicles as well as the usual line-up of Porsches and Ferraris.

The choice of tracks is similarly varied, with eight main courses and one hidden one giving drivers the chance to race past the cliffs of Dover, grind through the mountains of Italy, and travel far beyond. "We've got some amazing tracks," declares Neil, "especially the hidden one, which is absolutely huge." Clockwork has been careful to ensure the difficulty curve offered by the routes is smooth, with the choice of vehicles broadening as the game proceeds. Then there's the clutch of racing options to give *Speedster* long term appeal, including championships, time trials, and the opportunity to race against a ghost car. And all the steering and suspension dynamics are put through their paces by the wealth of gradients, jumps and uneven surfaces in the game. Unlike some supposed 3D overhead games, there's nothing two dimensional about *Speedster*.

Clockwork isn't too worried about the competition. "From what I've seen of *Micro Machines* the tracks look fairly bland and flat," says Neil. "Our tracks feature all sorts of cool bits, like the one in Alaska where players get to race over a frozen riverbed and weave in and out of stationary trains. The

While the visuals suggest a descendent of the old slot-racing games of yesteryear, *Speedster* is a seriously complex road hog. Even crashes are mathematically calculated.

tracks are always splitting and merging, and there are plenty of sections where you see the road pass nearby, overhead or below."

The other major plus with *Speedster* is the inclusion of a split-screen, two-player option. This makes non-stop action possible, unlike the restrictive multi-player design of the *Micro Machines* games. All this is achieved without any extra loss of detail or slowdown. "The game will run in low resolution at 30 frames per second on a P90," reckons Neil. "For the high resolution it'll run

The level of 3D detail is impressive, with solid looking trees, and vehicles that are correctly light-sourced. The landscape is also light-sourced, but as in *Quake* is pre-calculated.

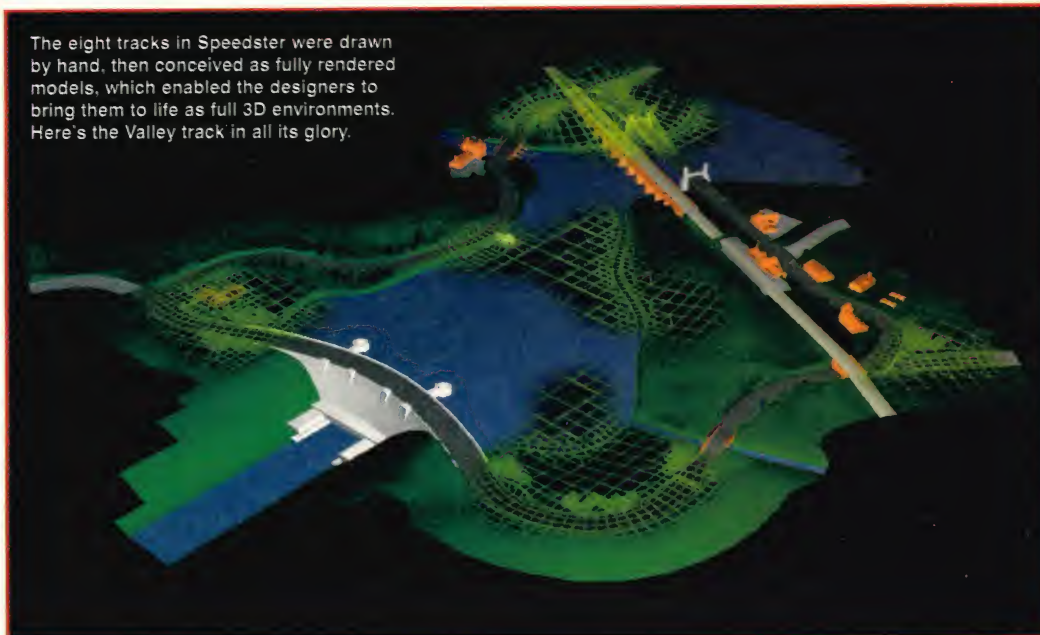
quite happily on a P133, though you'll need a P200 to get 30fps."

There's something refreshing about *Speedster's* serious approach to the art of racing small cars round miniaturised roadways. While other developers set about introducing cartoon elements, power-ups and all manner of weaponry, Clockwork's title concentrates purely on the vehicles and the tracks they race over. It'll be interesting to see whether working with such a focused design pays off. (MR)

NEXT MONTH

We'll have the full review of *Speedster*, plus a demo for your enjoyment.

The eight tracks in *Speedster* were drawn by hand, then conceived as fully rendered models, which enabled the designers to bring them to life as full 3D environments. Here's the Valley track in all its glory.



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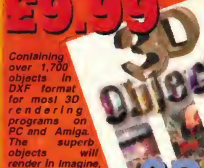
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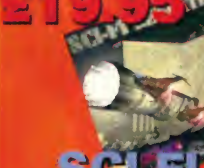
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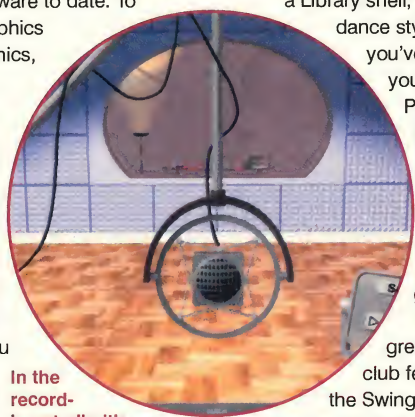
Work in progress: Music Machine

Music making software is one of the most creative and fun uses of the PC there is, and we have a sneak preview of the first musical offering from PNE.

If you're a regular reader of PC REVIEW you'll have noticed we've covermounted our fair share of music software in the past. By now you'll all have copies of *Music Maker* from Magix Entertainment, and *Mixman Spin Control* from V2 Records. These programs were amongst the first to help you make club music on your PC. *Music Machine* from PNE is the latest in DIY, easy-to-use music software, and in this special preview you'll find out all about it.

The best thing about this sort of software is that anyone, regardless of their musical ability, can create their own house tracks. Even though it doesn't transform nerdy Internet users into the coolest London DJs, it does promise to help even the most tone-deaf beginner create some happening club sounds. *Music Machine* makes no promises about improving your social standing, but it does promise to be the best piece of easy-to-use music making software to date. To top it all it's got 3D graphics drawn by Motion Graphics, best known for its Lucozade TV ad.

Immediately it's loaded up, *Music Machine* strikes you as being different from the pack. PNE has moved away from the sequencer feel of most music software. In true multimedia tradition you find yourself inside a virtual studio. You start off in the Control Room. This is the nerve centre of your studio. From here you can go to the Arrange



In the recording studio it's up to you to whisper sweet nothings into the mic. A few oooh baby's would not be amiss here.



The arrange Panel. The different coloured blocks each represent four bars of music. It's simple to link them together.

Panel, Mixing Desk, DJ Room and Recording Studio. All the elements in *Music Machine* are graphical and any technical screens are craftily hidden away.

Facing you in the control room you'll see a Library shelf, which reveals the 20 dance styles available. When you've chosen your style, off you go to the Arrange Panel. This is where you put your track together. You can choose from 36 keyboard, bass and drum arrangements per song until you've mastered the perfect groove.

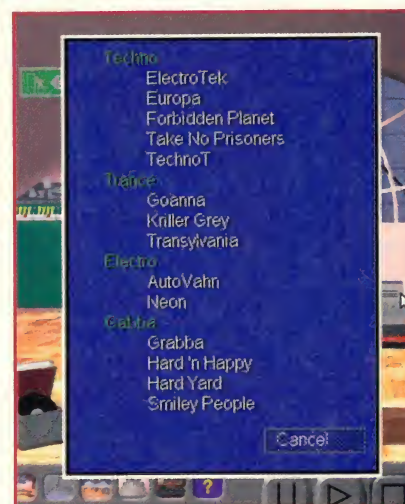
The music sounds great and has an authentic club feel. The Triphop trips, the Swing Beat swaggers and the Ambient is so laid back that it wants to lie down on a cushion in your living room and spread. It's amazing to think that no MIDI or sequencing hardware or software is needed at all to create CD quality, 44KHz, true stereo songs – even a humble 486DX incorporating only a basic soundboard is up to the task.

Once you've arranged your track you move on to the Mixing Desk where you can adjust bass, drum and keyboard levels and fade bits in and out. In the DJs room you can play about on the decks mixing together your favourite tracks in true DJ style. There's also a recording studio where you can record some samples to mix in later.

Music Machine looks like being the easiest music creation tool yet, and you can judge for yourself next issue. (GB) Pearson New Entertainment 0171 331 3920



This is the sparsely-decorated control room of your virtual studio. Various hot-spots around the room take you to the other areas.



From Handbag to Hard 'n' Happy, *Music Machine* caters for all tastes. As long as you like repetitive beats and load bass, that is.

NEXT MONTH

We'll have an exclusive demo on the coverdisc and a full tutorial inside the magazine. Can you stand the wait?

Who's in the house?

Music Machine covers all the major house music styles popular in clubs throughout Europe. The categories include:

- House** – Mainstream, Garage, Handbag
- European** – techno, Electro, Trance, Gabba
- USA** – Rap, Hiphop, Swing
- Jamaican** – Reggae, Dub, Ragga, DanceHall
- ChillOut** – DreamHouse, Acid Jazz, TripHop, Ambient



Pull out the bookshelf and choose your dance music style – this is the Chill-Out selection.



Get jamming in the DJ room. Here you can mix together all your tracks while the plant looks on.



PLAY YOUR FAVOURITE

We PC owners seem to be constantly fighting a losing battle. Every time we spend £1,500 on a new PC, someone else spends £200 on a console system and seems to enjoy far more impressive games than us. They give us stick. They can't understand why we spend half an hour configuring our systems to run a game when the PlayStation just accepts a CD and gets going.

If you are tired of these insults, prepare to hear a very good reason why the PC will beat these young upstarts every time. Buy yourself a console game and when you complete it, throw it away (assuming you don't tire of it before you reach the end). In contrast, buy a PC great game and it need never end. That's the beauty of the PC – its ability to endlessly update any game.

Perhaps it all started with *Doom*, certainly if we're talking about global acceptance. Among the many astounding ideas id had when creating this ground-breaking game was that by releasing the method used to create levels into the public domain, *Doom*'s life could be extended immeasurably. Of course, this was only possible because, firstly, *Doom* proved to be extremely popular, and secondly, some student programmers thought it would be a wheeze to develop a program that eased the development of *Doom*'s so-called WAD files. The result? The Internet and every magazine coverdisc under the sun was packed to bursting with the most bizarre and fantastical *Doom* levels imaginable.

Skipping forward to today, a group known as Hypnotic produced levels for *Quake* that even impressed id, Quake's own



authors. In fact, in true Remington Fuzz Away fashion, id was so stirred by these lads that it gave them the rights to design the official *Quake* add-on packs. Rather than simply making a collection of newly designed levels, Hypnotic has gone to the core of the program to add new monsters, new weapons and even new techniques in the game. And as if to prove the financial viability of increasing the life of a game the punters have already bought once, one of the world's largest games companies, Activision, happily paid out an alleged fortune for the rights to publish Hypnotic's efforts. The first of these, subtitled *The Scourge of Armagon*, is so good that it puts the original *Quake* levels to shame. The sequel is due out shortly.

As with *Doom*, id has sensibly left it to others to produce truckloads of *Quake* add-ons. Bedroom developers are producing 3D

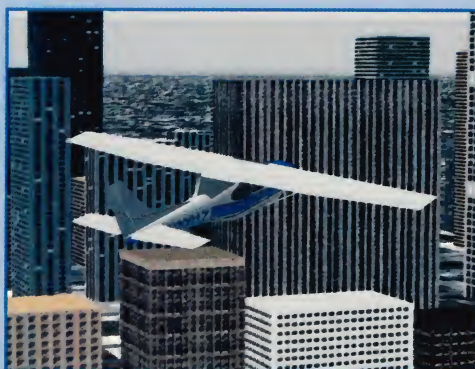
CAD-style level editors, and while most additions are distributed via the Internet, there is no legal problem in making stacks of cash from commercially releasing your *Quake*/*Doom*/*Hexen* add-on.

Shrak claims to be the first CD to fully alter *Quake*, most notably by adding a grappling hook, but there are endless collections of levels and patches available, from *Quake Soccer* to *Quake* publisher GT's own *Aftershock*. You'll find a selection of *Quake* freeware every month on CD REVIEW.

Not everyone is quite so keen on the add-on bonanza. *Command & Conquer* was the best selling game of 1995, and although competition is a little heavier this year, its sequel *Red Alert* is likely to be one of the biggest sellers of 1997. Yet, despite the success garnered by the countless add-on packs that are available, Virgin is becoming

Nice little earner

Microsoft struck gold many moons ago with the release of *Flight Simulator*. Now up to version six (but annoyingly called *Microsoft Flight Simulator for Windows 95*), it's been purchased by over a million people who want to fly without worrying about aliens, Russians or taking out SAM sites from 20 miles away. Sensibly, the game's designers released information about how to write additions to the game, which has resulted in extra aircraft, new landscapes, and in the case of one CD, called *FSFX* from



Papa Tango, how to improve the graphics and the screen redraw speed. We think this customisation is a nice little earner because it's the very reason why real pilots buy the game and the add-on pack. *Flight Simulator* is so realistic that it's cheaper to fly from Heathrow to Sydney in a Boeing 747 on *Flight Sim* than to buy the plane and pay for the fuel. No, really!

To satisfy the desires of real pilots, *Flight Simulator for Windows 95* has every update you could imagine.

CALLING ALL TRUE CREATORS

If you create your own *Quake* levels or add-ons for any other game, why not send them in to us? We might be tempted to put them on our cover CD to give your creative efforts a wider audience. Go on, you know it makes sense...



You've found your dream game and you've played it to completion. But nowadays that's just the beginning...

GAME FOREVER



increasingly incensed by discs like ACE/US Dreams' disc, *Are You Ready & Alert*. The possibility of a CD-ROM called *Red 6* on the horizon from a Far East firm is a further irritation. Virgin's complaint is one of copyright infringement and stretches to insisting that magazines don't include any C&C or *Red Alert* add-ons on their CDs.

It's an unusual and unique standpoint, because every other publisher has given the add-on option a resounding add-on thumbs up. For many companies, it seems as if the over-riding opinion is that add-on packs are positively beneficial. Naturally add-on discs extend the

long-term interest of a game that would otherwise be completed within a week, like *Quake*. But there's a secondary factor, one that makes financial sense in the same way that alcohol suddenly explains an episode of

Add-on discs extend the long-term interest to a game that would otherwise be completed within a week.

The Prisoner. When you consider that well over 50 per cent of a game's design is dedicated to developing the game engine, then it's common sense for the developers themselves to quickly design

another set of levels and sell it as soon as possible. You generate extra income and extra interest, and hell, you might even stoke up sales of the original game on the back of the add-on pack. When Ocean released

Worms Reinforcements for £15, the original *Worms*, which was also required, suddenly reappeared in the Top 10.

Possibly the greatest triumph in this area was the arrival of *Doom 2*. Id itself has confessed to popping the sequel out in record time to satisfy fans of the original – it really wanted to get on with *Quake*, the genuine sequel. *Doom 2* featured some new monsters, but only one new weapon. Virgin obtained the rights to sell this game, which flew off shelves for £50, when the original game could still be bought for just £40.

As a halfway house, extra levels from official sources work incredibly well. Blizzard has just published 70 extra *Warcraft 2* levels, keeping admirers going until *Starcraft* appears in September, with *Warcraft 3* expected to follow in early 1998. With



Activision's *Scourge of Armagon* is so good it puts the original game to shame. And it's just one official map amongst thousands of unofficial *Quake* levels.

CONTACTS

These guys can get you the goods...

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ON THE NET

Flight Simulator add-ons – Top 20 freeware scenery files at <http://www.vianet.net.au/~k-raybill/fltsim5/top20.htm>

Levels, patches and editors for *Quake* exist at <http://www.stomped.com/>

Shrak – Sensibly found at <http://www.shrak.com>

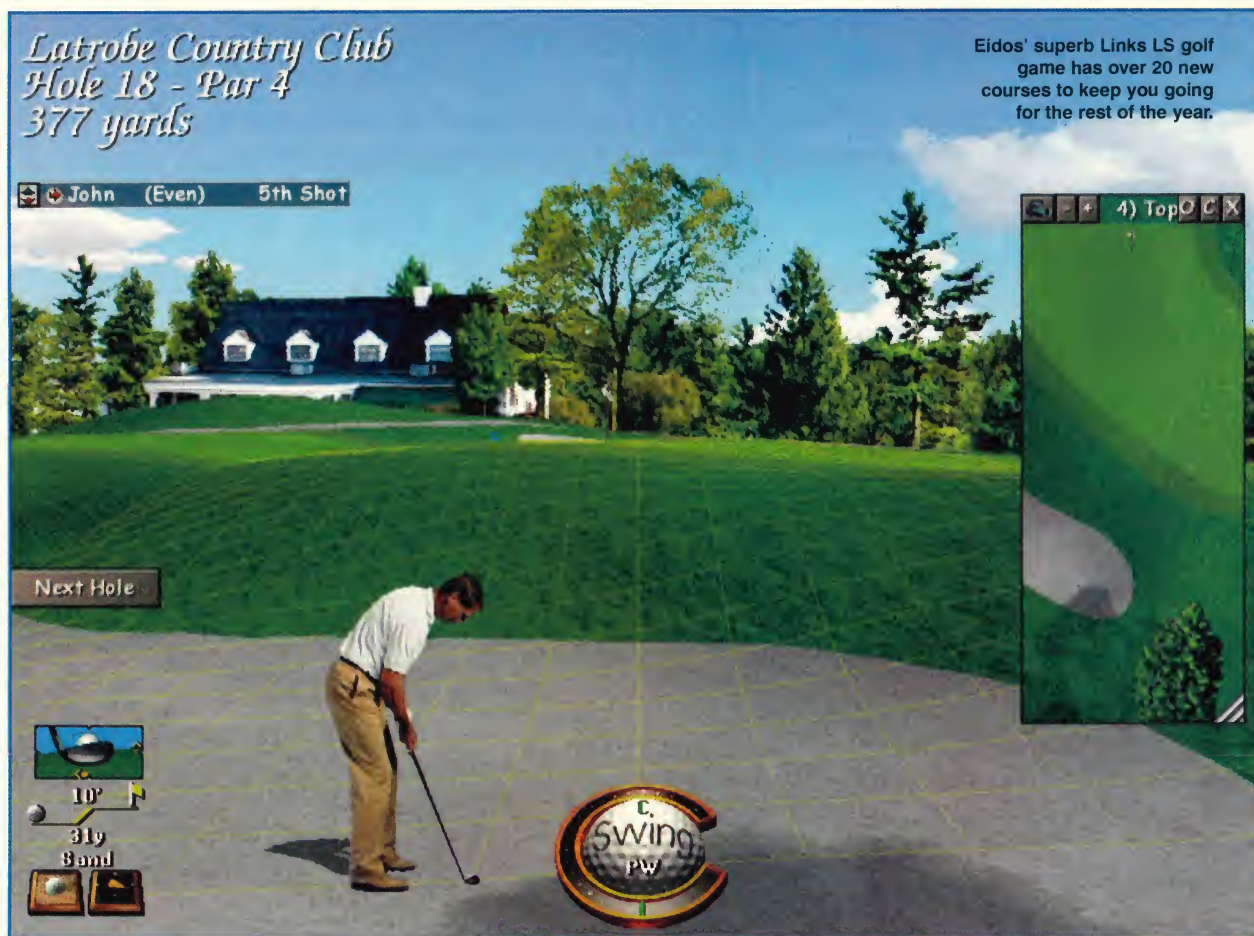
GP2 files – Glorious number of utilities at <http://home.cwnet.com/randallc/gp2setup/>



INSTANT ACCESS FEEDS THE HUNGRY

Ready to feed the insatiable appetites for originality among F1GP2 fans, Instant Access has released the Perfect Grand Prix add-on pack. The box boasts that it's 100 per cent unofficial.

Likewise, Flight Sim 6 pilots can get their hands on the flight planner Navigator 6 and Final Approach, which adds 2000 airports to the game. If that's not juicy enough, IA is also offering Perfect Flight Deluxe England & Wales, a scenery disc for this here country.



Eidos' superb Links LS golf game has over 20 new courses to keep you going for the rest of the year.

► badging and quality advertising, the official packs not only tend to fare better than their unbranded counterparts, but they're also treated with greater respect. That's the flipside of offering level design to the public domain (*Warcraft 2* was bundled with a map editor). With thousands of levels available, chances are that the majority of them are made by enthusiasts who just haven't got an eye for game design.

Let's remember that the original levels are not only created by professionals but are subject to the same rigorous testing as the game engine itself, each being carefully refined until it's perfected.

Many other companies are now following the official add-on path. Blue Byte recently

scored well recently with an official mission disc for its excellent *Settlers 2* strategy game. MicroProse has also done well with extra scenarios for the astounding *Civilization 2*. Both packs almost double the size of the game for just £15. LucasArts' *X-Wing* and *TIE Fighter* both had add-

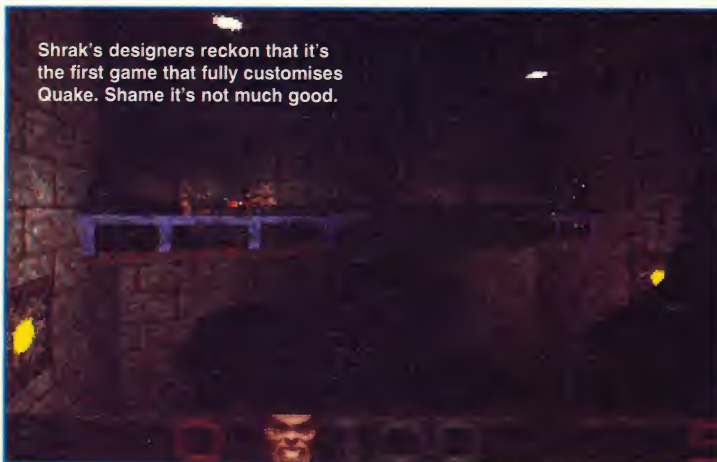
on missions, despite the fact that they were huge in the first place. Activision's *Mech Warrior 2* was followed by *The Ghost Bear Legacy*, which retailed for the princely sum of £30. Virgin will soon offer *Counter Strike* for *Red Alert* – a game that's been out for all

of four months. (Perhaps this explains Virgin's anger over those rival expansion discs). And you could be buried under the collections of new courses for golf games like *Links* from Eidos and *PGA Tour* from EA.

But perhaps most revealing is the vast collection of utilities and add-ons for *F1GP2* from MicroProse. These have been created by real amateur programmers. MicroProse released no information describing the programming or format of the files, yet they let you change your car's graphics, handling, abilities and even the position of your pit crews. It's a testament to how desperate games players are to inject new life into the games that affect them, that mean so much more to them than the usual dross. And that's why the PC will always be a better games machine than any console. (SO)



There are countless extra maps for Virgin's *Red Alert*, but the company wants no-one to profit from it.



Shrak's designers reckon that it's the first game that fully customises Quake. Shame it's not much good.



Quake is arguably the most extended game ever. You can even play QuakeSoccer and QuakeChess!

CD REVIEW

On CD REVIEW this month we feature the *Settlers 2 Mission CD* demo, plus a collection of 20 new Quake add-ons. We hope enjoy them.

**If you could recognise all these
some people would call you an anorak**



We'd call you ready

Air Warrior® II is more than a learning curve. We're talking dives, twists, loops, accelerated stalls and more - everything you'll need to survive in the ultimate on-line dogfight.

With over 30 aircraft, 100 missions, and a variety of campaigns set in three historical arenas: WWI, WWII and the Korean War; Air Warrior II will hone your dogfighting skills and teach you air combat strategy. Only by

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Everything you ever wanted to know about...

TRAVEL

Hiking in the Himalayas? Soaking up the sun in Sicily? Your PC can save you money on airfares, book your room and even tell you what to see...

Summer is coming, so it's time once more to stock up on sun block, polish your shades, and dig out that godawful fluorescent swimming outfit you bought on last year's hols and haven't summoned the courage to wear since.

The first step, though, is to decide where to go and exactly what type of holiday to book. Fortunately, it's not difficult to find loads of ideas by browsing through some of the Web's first class travel sites. *Fodor's*, for example, explains the joys of a trekking trip with llamas over mountainous terrain in North Carolina. The furry beasts carry up to 80lbs of gear each, pausing only to spit at wild rhododendrons. Or try following Microsoft's *Expedia* to Tikal, Guatemala, in search of temples frequented by the Mayans over 1000 years ago. But maybe you'd rather not actually do anything apart from stretching out on sand and occasionally sampling the sea? Then you should be able to locate a suitable sunbathing spot with *Epicurious Travel's* beach and island finder.

Bigger and easier than ever

One for incurable romantics this – GB Airways was asking £199 for tickets to Casablanca

But how about a place with good music, great food, summer temperatures in the 80s, and a spot of sightseeing to boot? According to *HolidayNet*, you can find all these in one place – New Orleans. If that sounds too good to be true, check it out on *CityNet* – a directory of over 3000 destinations all around the world. It's possible to discover what's on, where to go, and what to see in these towns and cities without ever leaving your desk. New Orleans' culinary delights, for example, seem irresistible.



Don't make the mistake of trying to dress like the locals when there's a camera about...

There's Mulate's restaurant serving up live music and dancing every night in the French Quarter, and K-Paul's Louisiana Kitchen, with Cajun cooking by top chef Paul Prudhomme.

Having decided to visit The Big Easy, in a virtual sense at least, the easy part is over. Now we just have to get there. The only realistic option for most of us is to fly. And the cheaper the better. Even if you did have time to search through the airlines' Web sites separately, you're better off using a service called TISS, as the fares listed are 20 to 70 per cent less than if you book direct. For our trip to New Orleans, flying out on June 7 and returning a fortnight later, the lowest return fare is



Encarta 97
World Atlas
● £49.99 ● Microsoft
☎ 0345 002000

AutoRoute Express
Europe 1997
● £59.00 ● Microsoft
☎ 0345 002000

Great Cities Europe
● £9.99 ● Focus
Multimedia
☎ 01889 570156



alt.travel
alt.travel.eurail.
youth-hostels
alt.travel.uk.air
rec.travel.cruises



With all the different countries and road names to learn, motor-ing across Europe could prove rather confusing to say the least.

Happily, it's possible to thoroughly plan your drive with Microsoft's AutoRoute Express Europe. Here, for example, is the shortest route between Prague and Vienna. If you get moving on the major roads, AutoRoute predicts the 178 mile journey will take about three hours 45 minutes. So if you start at 9am you'll arrive just in time for lunch.



The Villa Voyta hotel in Prague boasts its own spire, and a landscaped garden with gazebo. At £110 per night, though, it won't suit everyone...



On Negril beach in Jamaica you can sunbathe with a drink, or sit in the shade of a palm tree or go sailing instead.



TRAVEL

TRAVEL CHEAP

Artofttravel.com is a Web site containing a complete guide to travelling on less than \$25 a day, including a section on bargaining. Go into any negotiation looking like you're willing to walk away at any time, and don't start by offering half what the seller wants - they often mark items up to 10 times what they're really worth. Finally, never trade away something you think has more value than the goods or services you're trying to obtain.

Sightseeing with Microsoft Encarta 97 World Atlas

One of the best ways to plan an itinerary is to use a CD-ROM reference tool, and they don't come any better than Microsoft's *Encarta 97 World Atlas*. Simply zoom in on the map until your chosen destination appears. The Sights and Sounds button reveals interesting places, and fills you in on historical background or other interesting facts.



This basilica in Yamoussoukro, on Africa's Ivory Coast, is the biggest in the world. It holds up to 18,000 worshippers with an additional 300,000 on the esplanade.



Magnificent African elephants like these, says the *Encarta World Atlas*, communicate with each other over hundreds of kilometres using low-frequency sounds.



The Hotel St Marie in New Orleans is just half a block away from the famous Bourbon Street.

£422, from either Northwest or American airlines. Reservations can be made using the on-line booking form. Alternatively, if you're still undecided on a holiday destination after weighing up New Orleans' innumerable charms, you could take pot luck and find a late bargain at *Cheap Flights*. At the time of writing, they were asking just £81 for a flight to Paris, £99 to reach Zurich, and - one for incurable romantics this - GB Airways was asking £199 for tickets to Casablanca. So maybe not today, maybe not tomorrow, but sometime soon...

But where do you stay?

Let's assume we've booked our flight to Louisiana - where do we stay? Well, it's worth checking into the Hotel Library on *World Travel Net*, where the 94-room Hotel St Marie seems the most enchanting. Located just half a block away from the famous Bourbon Street, it charges \$85 a night in June. OK? Then simply complete the on-line booking form to reserve a double room.

Money no object

HotelNet offers a similar service for cities in Europe, but you'll need a deep wallet since the establishments are all owned by large corporate chains whose prices vary little throughout the world, even in relatively cheap locations like Prague. A typical example is the £110 per night Villa Voyta, which boasts a spire, landscaped garden and gazebo. More

hotels can be located from the *TravelDex* Web directory, but while it did point to an accommodation list for Prague, no prices were listed. The best the Internet seemed able to offer was the Czech National Federation of Hotels and Restaurants' phone number, courtesy of the *World Travel Guide*.

Living like a bohemian

Wherever you stay, Prague is a decidedly hip destination these days. Once the capital of Bohemia, it's now... erm, the bohemian capital of central Europe, at least according to the *Great Cities of Europe*, published by Focus Multimedia on CD-ROM. While you're there you'll probably want to see at first hand the baroque spires of Prague Castle, which feature in one of *Great Cities'* many short video clips. Back in the 16th century it was home to the Habsburgs, rulers of the Austro-Hungarian empire, and being a royal family, they weren't short of cash and built a small summer home in the Austrian capital of Vienna. Visitors can marvel at the opulent grandeur of 40 rooms of the Schonbrunn palace, which is one of the notable features marked out by Microsoft's *AutoRoute Express Europe* - a handy tool for

planning journeys.

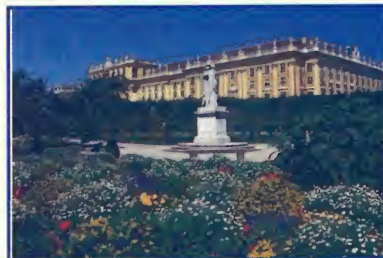
But perhaps you fancy a more exotic excursion, like those described on the *Travelmag* site? One of its contributors celebrated the sugar crop harvest festival with the natives of Barbados, while another paddled a lilo in the crocodile-infested waters of Northern Australia. Diseases like Bubonic Plague can be just as hazardous as crocodiles, though. *Travelmag* reports that they killed 45 people in Zambia from August 1996

until early this year.

And even if you're holidaying closer to home, it's best to get some good advice before you set off. The Foreign & Commonwealth Office's on-line service is ideal for that, providing travel information on 120 countries, together with addresses and telephone

numbers for every British Embassy, High Commission and Consulate. The other great danger is finding your embarrassing holiday snaps ruthlessly published on the satirical site No Shitting in the Toilet.

Going away does mean you'll have to tear yourself away from *Quake*, but there is one place you can still enjoy computer-based entertainment and be on vacation at the same



The Schonbrunn palace in Vienna once belonged to the Habsburgs, rulers of the Austro-Hungarian empire.



See the sights in Prague with the help of *Great Cities of Europe*. Don't miss St Vitus Cathedral or the spectacular view of Charles Bridge at night.



The Old Town Square in Prague looks pleasant now, but in 1415 the Protestant martyr Jan Hus was burnt at the stake. These days it's full of market stalls.

Just what the Doctor ordered

BLOATY
HEAD

THE
SQUITS

theme HOSPITAL™

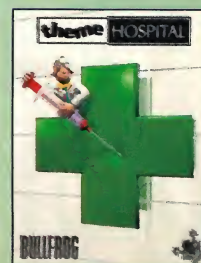


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Part two: Chips with everything...

THE HISTORY OF THE PC

It wasn't all glam rock and safety pins. The 1970s also saw the arrival of the microprocessor, the word processor and the spreadsheet.

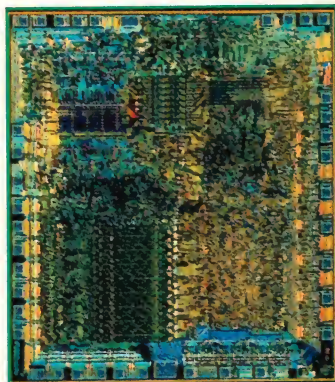
Most of today's techno-literate 20-somethings – the Tomb Raiders, cybercafe surfers and new Internet millionaires – were born in the 70s. Equally, that decade saw the birth of the computers they surf and sell.

It was Intel which did the groundwork. Founded in 1968 to create economically viable semiconductor memory, it invented the microprocessor by accident. In 1971 a Japanese calculator manufacturer called Busicom asked Intel to design a set of chips for a high-end programmable calculator. Its original specifications demanded 12 custom chips, which Intel engineer Ted Hoff rejected as unwieldy. Instead of custom chips, he proposed a general purpose single-chip device, which retrieved information from semiconductor memory.

Hoff's general purpose chip (the 4004, created in 1971) easily met the needs of Busicom's calculator. But Hoff realised the same chip could also be slotted into a variety of devices without any redesign.

Unfortunately Busicom owned the rights. Hoff and his comrades had to campaign for Intel to spend \$60,000 buying rights to the product. Ironically, the successful argument was that it

would enable Intel to sell more memory. Smaller than a postage stamp, the 4004 delivered as much computing power as ENIAC (the late 40s computer created by Mauchly and Eckert). It was followed in 1972 by the 8008. An 8-bit model, the 8008



Intel's 8080 looked like an aerial photograph of Chicago.

processed information at twice the speed of the 4004.

The chips were originally employed in embedded applications like digital scales, medical instruments, traffic lights and even pinball machines. In 1978 Intel created the 8086, a 4.77MHz microprocessor with 16-bit registers and data bus. An intermediate chip, the 8088, followed in 1979. It used 16 bits internally but supported an 8-bit data bus to connect to existing 8-bit device controlling chips. It would

later power the first true PC.

With Intel lacking confidence in personal computers, others had to prove the demand. The first digital microcomputer for personal use was the MITS 816, launched in 1972. Without a display or keyboard, it was sold to enthusiasts. 1975 saw the first mass marketed personal computer, the MITS Altair 8800, which used Intel's 8080. For \$375 it offered 256 bytes (not 256k) of memory but no monitor or keyboard. It was lapped up by the long-haired computer enthusiasts of Southern California. Early customers were Bill Gates and his associate Paul Allen, who wrote their first product for the Altair – a BASIC compiler.

It was left to fledgling geniuses Steve Jobs and Steve Wozniak to show just what the personal computer could do. Having created the original Apple in a garage, they followed it up with the \$1298 Apple II which came ready assembled, complete with keyboard and monitor. It was a big success,

especially in schools and colleges. Elsewhere the Commodore Pet, a first stab at business PCs, was released in 1977 with reasonable success, although by today's standards only a tiny number of machines were sold.

The 70s saw other developments. In 1971 Alan Shugart at IBM produced the 8-inch floppy disk. He then left IBM to found his own company and, in 1980, introduced the Winchester hard drive, which revolutionised the storage capabilities of personal computers. And in 1973 Robert Metcalfe at Xerox PARC created the Ethernet, the basis for local area networks.

Software was also changing. Probably the most important application ever created was 1978's *Visicalc*, the first spreadsheet. It sold personal computing to people not yet convinced, like accountants and managers. Following its success, 1979 saw the release of *Wordstar*, the first word-processor. With clearly useful software arriving, the time had come to sell PCs to the masses. (OB)



Manufacturing chips in the 1970s was rather like visiting a dangerous serial killer.



Intel's Gordon Moore (left) realised computing power would double every 18 months, but he didn't know much about moustache grooming.

1971-1980



RAM AT HOME

THE PCR HANDBOOK

Motherboards have been exploded and we've given you the spin on CD-ROM drives. This month we butt into your PC's memory...

Part Three

RAM, or Random Access Memory, is used to hold data and programs in your PC for fast access. It's thousands of times faster working from RAM than from disk as the processor can read from RAM and write to it, only moving data to disk when it has to. So, the more RAM you have the faster your PC can run applications.

In fact there are many kinds of RAM in a PC. System RAM, or addressable memory, is what we usually mean when we talk about it. But there is video RAM, RAM in the BIOS and other chips, cache RAM in the processor – also called level one or L1 cache – and L2 cache between the processor and the system RAM. None of these types of RAM are normally accessible to users.

Technically, RAM is DRAM, for Dynamic RAM. This just means it loses information when the power goes off. RAM which keeps information without power is called ROM, Read Only Memory. DRAM is quite slow. It takes many nanoseconds to deliver up or accept data – then has to rest for a while

before it feels up to doing it again. Combining these times gives you the access time, typically 70ns in a modern PC.

In practice, DRAM isn't even this fast, and several tricks must be played with it to make it appear faster. These include interleaving, paging and wider interfaces.

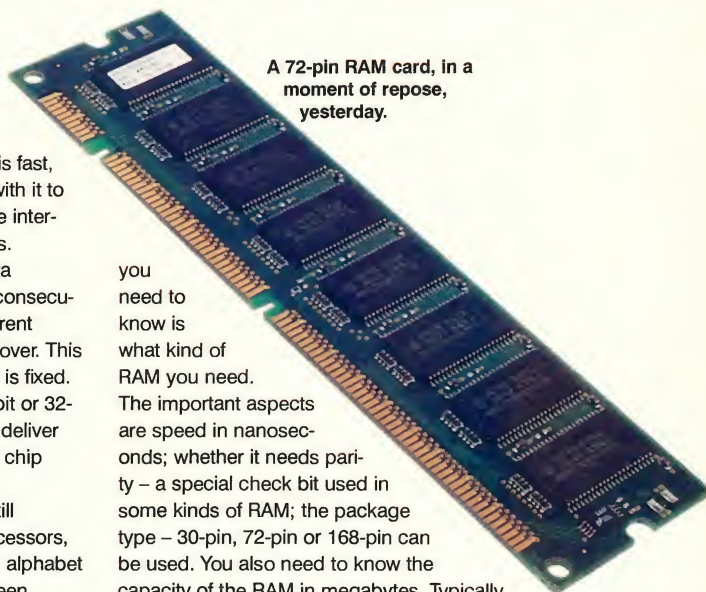
Interleaving means splitting data between two banks of memory so consecutive chunks of data come from different chips, giving each more time to recover. This only works if the chunk access size is fixed. 16-bit interleave doesn't help for 8-bit or 32-bit access. Paging enables RAM to deliver data faster from a section of a RAM chip already accessed.

Despite these tricks DRAM is still becoming too slow for modern processors, even with L1 and L2 caching, so an alphabet soup of faster RAM variants have been designed. These increase speed at the cost of internal complexity – and higher prices.

From your PC's point of view, the thing

you need to know is what kind of RAM you need.

The important aspects are speed in nanoseconds; whether it needs parity – a special check bit used in some kinds of RAM; the package type – 30-pin, 72-pin or 168-pin can be used. You also need to know the capacity of the RAM in megabytes. Typically, RAM can only be fitted in pairs of the same size. Check your motherboard documentation for details before ordering any. (AC)



A 72-pin RAM card, in a moment of repose, yesterday.

The Future Of RAM

The most important move in RAM circles recently is Intel's decision to go with the Rambus company's new design, called RDRAM (Rambus DRAM). The next generation of super fast processors needs faster system memory to avoid over complex and overpriced PCs.

The Rambus company has shown working chips, unlike the competing SyncLink Consortium, which is a collection of RAM manufacturers trying to pro-

mote a newer and faster, open standard for the next century.

Basically, Intel needs memory capable of running at 200Mhz or faster and delivering 1.6Gb per second but costing no more than it does at present. The Rambus design can do this though it breaks with current standards and needs new motherboard and chip designs. Expect to see it start appearing in PCs in late 1998 or early 1999.

Those RAM types in full (for this week)

DRAM – Dynamic Random Access Memory. This is the basic kind of system RAM.

EDO RAM – Extended Data Out RAM. This sort of memory provides a variant of fast page mode memory access.

Burst EDO – This has an internal counter which enables it to deliver strings of consecutive data faster.

Static RAM – An expensive RAM which uses more transistors for each bit to provide faster – 20ns – switching. Used for L2 cache in PCs.

CDRAM – Dynamic RAM with a Static RAM cache handily built in.

EDRAM – Enhanced DRAM, basically DRAM mapped directly on to internal SRAM.

MIDRAM – Multibank DRAM, lots of small blocks interleaved and pipelined for faster access.

SSRAM – Synchronous Static RAM. It has a clock which keeps in step with the system clock.

SBSRAM – Sync Burst SRAM, basically SSRAM with a burst counter for even faster string access.

VRAM – Video RAM, used on graphics cards because it can be read from and written to at the same time.

WDRAM – A simpler kind of VRAM.

3DRAM – Cache DRAM with an ALU Arithmetic Logic Unit built in to handle 3D graphics functions.

RDRAM – Rambus DRAM, the next generation memory type as chosen by Intel for its P6 super fast Pentium Pro replacement.

nanosecond – a thousand millionth of a second.



THE MAIL

No need to fear the printed word, especially not when it's your word that's been printed. We answer your comments on our last issue...

NAME THE GAMES

Dear PCR,
Thanks for your article on how to link up two PCs for head to head gaming using a null modem cable (PCR66, page 112), I am now able to spend my weekends battling against my neighbour at *Quake*. I noticed in your box on the best head-to-head games, however, that you don't actually name all the titles. I recognise one or two of them, but what are these games called? Who knows, I might want to buy some of them.

Brian Malone, Durham

Sorry. Working anti-clockwise around the box from the top left, the games are *Quake*, *Red Alert*, *Formula One Grand Prix 2*, *Diablo* and *Warcraft 2*.

SELF RIGHTEOUS

Sirs,
I would like to take this opportunity to thank you for the excellent review of the 3D market in the March edition of PC REVIEW. This is the best of the reviews which have been printed in recent editions of various computer magazines. It is a refreshing change after the comical ones in magazines such as *PC Format*, *PC Guide* and *Computer Buyer*.

You have achieved near perfection in your reviews but there is one point

which would have made them perfect: you should have given the Righteous 3D card the edge over the Monster 3D. I say this for the following reasons.

- 1) As you reported in the review the R3D is faster than the M3D.
- 2) The R3D is better constructed than the M3D in the following manner. The R3D uses mechanical relays which are reported, in all forums, as being superior to the electronic relays in the M3D.
- 3) The loop cable supplied with the R3D is of much better construction than the one supplied with the M3D and as such allows a better 2D signal through to the card.
- 4) Once again Future Publishing has seen fit to print the RRP prices of the various cards. The public is aware of the true cost of various cards, in fact PowerMark even has an advert immediately after the review which shows that the R3D is selling for £149 + VAT = £175.05 and not the £286 indicated in your review. Your review makes the R3D look very expensive when in reality it is very much cheaper than your review indicates.

Anyway keep up the good work and I look forward to more reviews in the future with the reality you have shown in this review.

Ian Carmichael, via Internet

Thanks for your praises and the points you raise. It was a very close

call between the Monster and the Righteous cards, and we gave the accolades to the Monster on the basis of its apparently lower price. Naturally we always endeavour to carry the most up-to-date prices in our reviews, but street prices can vary incredibly and if, as you say, the Righteous is now undercutting the Monster on price then we heartily recommend snapping it up. We are in fact reconsidering our policy on the prices we quote. There are, however, numerous pitfalls involved with finding correct street prices.

MONKEY ISLAND 3

Hello REVIEWS folk,
Please could you give me information on any forthcoming

Lucasarts releases? Firstly, when will *Monkey Island 3* and *Outlaws* be released? Secondly, what other adventure games are they planning to release? Will they be doing a sequel to *Day of the Tentacle* or *Sam & Max*? The Tilt, via Internet

No problem, er, Tilt. According to Virgin, which distributes these games, *Outlaws* will be out in April or May. *Curse of Monkey Island* (or *M13*) should be on the shelves around August time. No release date is ever written in stone, though. No *Day of the Tentacle* or *Sam & Max* sequels are planned.



If you have a point to make, write it down and send it to us at the address shown above, or e-mail us at pcreview@futurenet.co.uk.

LETTER OF THE MONTH

IS MICROSOFT BEING SINISTER ABOUT OFFICE 97'S HTML FUNCTIONS?

Dear PC REVIEW,

I haven't seen anything about *Microsoft Office 97* yet in PC REVIEW unless I've got a blind spot. I just want to warn anyone who is getting it or already have it about the Web page design part.

With it the user is able to create and edit Web pages in *Word*, *Powerpoint* and *Excel* using templates. The templates are okay but they could be better because they are a bit boring. What Microsoft has done is put in a driver that lets you print to an HTML Internet file and then you can publish it on the Net. The problem is that when the page is up it can only be viewed with *Microsoft Internet Explorer 3* and no other browser. This is a real pain seeing as I'm using a Web browser called *Opera 2.1* and

cannot see these pages when they might be worth viewing.

Finally, a couple of months ago you had an article about Round 3 being *Netscape 3* and *IE3*. I've heard a rumour from the States that this has now come to Round 4 with *Netscape Communicator* (*Netscape 4*) and *IE4*. Is this true? If it is where can I get copies of them?

Mark Livesey, via Internet

Firstly, we shall be reviewing *Office 97* next month so there's no need to have your eyes tested after all.

Secondly, we checked with Microsoft's PR office as to whether there was any way of viewing *Office 97*-created Web pages with other browsers but as we went to press we were still awaiting a reply. If, as you say, *IE3* is essential

for viewing such Web sites then it's a massive oversight on the part of Microsoft...

Or perhaps it's something more sinister – maybe the company wants to dominate the Web browser market. If Microsoft is intentionally excluding support for other browsers from pages created by *Office 97* then PC REVIEW takes a very poor view of it indeed.

And lastly, no, Round 4 hasn't started yet because only one product is currently available. You can download a beta test version of Netscape's new *Communicator* suite from its Web site (www.netscape.com). *Communicator* includes *Navigator 4*, along with a range of other tools intended for the corporate intranet user. This follows Netscape's decision to concentrate on business rather than home users. The final version will be available in April or May.

NEXT MONTH IN PC REVIEW

Home of the Future

- Control your heating, lighting, security, appliances and even plant watering using your PC.
- Forget keyboards and mice, with embedded technology computers will work for you 24-hours a day, and you won't even be able to see them.
- Plasma screens, 3D TVs and mind-powered control systems – the future of entertainment is in the home.

Space Station Simulator

We'll bring you an exclusive demo of the amazing new program that lets you build your own space station, along with a full review.

X-Wing vs TIE Fighter

LucasArts is back with a galactic vengeance. We'll be reviewing the hottest space blaster since The Darkening.

Moto Racer

The great-looking 3D motorbiking game from EA, featuring the Suzuki racing team. We'll rev it up and review it.

Buyers Guide

Removable storage drives. The future is magnetic... or is it?

How to...

- Turn your PC into a TV – it can be done
- Compose a dance hit using Music Machine
- Create fantastic organic art with Cybertation
- Making multimedia: the conclusion of our rocking tutorial

And on CD REVIEW...

● Descent to Undermountain Swords. Magic. Orcs. All in 3D and coming at you in the demo every role player's been waiting for.

● Demos will include Sophie's World, Music Machine, Theme Hospital, Absolute Bedlam, Pod, Kick Off 97, Speedster, Comanche 3 and Outlaws.

● Plus another 100 pieces of clip media supplied by our very good friends at IMSI. Fonts, pictures, sounds – everything you need.

FREE WITH EVERY GAME OF POD...

...A TANK FULL OF ADRENALIN

POD is not only the fastest, meanest racing game ever, it's also the first game to harness the incredible gameplay and graphics potential of MMX™, 3DFX and Pentium technologies. It's also the only game that allows you to play opponents either split screen, link, over the

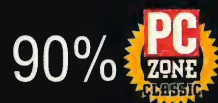
Internet, LAN or modem in any combination. In addition to a staggering 16 huge tracks and 8 fully customisable cars, you will be able to download new tracks and cars over the Internet or using upgrade kits.

Pod is the first game you will never grow tired of!



Experience POD Online
<http://www.ubisoft.com>

pod

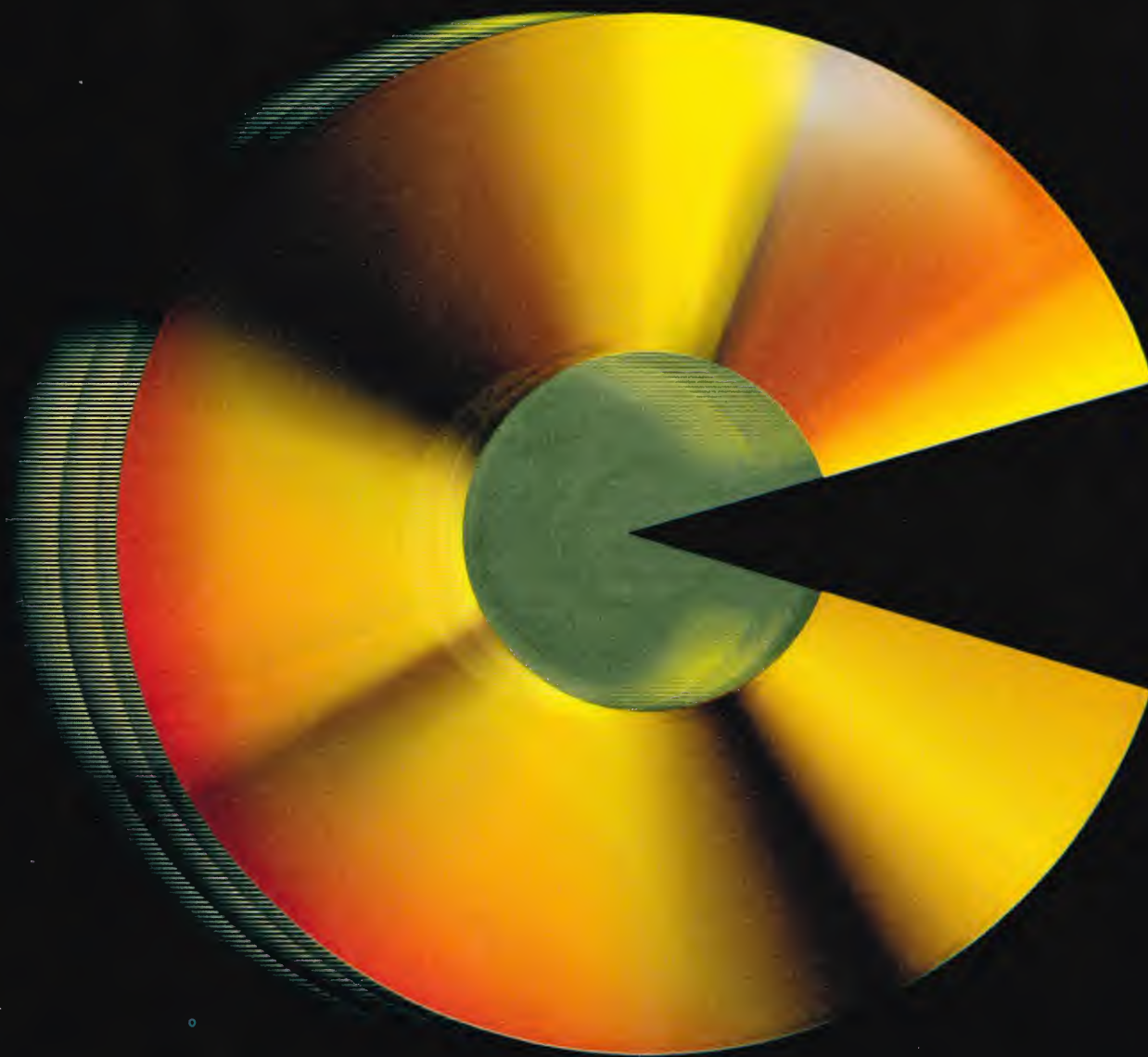


"One of the best arcade racers on the PC"



DVD: THE CD SLAYER

Everything you need to know about DVD - why it will be huge, what it means for your PC and how it gobbles up CDs without blinking.



Remember how the T1000 kills Jon Conner's parents in *Terminator 2*? Calculating that the time-travelling Michael Behn will almost certainly attempt to phone Jon's folks, the T1000 terminates Mrs Conner, then mimics her voice over the phone. Mr Conner arrives home and finds Mrs Conner (the polymorphing T1000) in the kitchen. It's only when he tries to engage her in some light banter that she transforms her arm into a two foot long molten blade and skewers him through the neck.

Confused? Don't worry, it all makes sense in the film. Similarly, DVD, the next generation storage medium set to replace CDs, is a complicated subject, packed with hype and jargon. Digital Video Disc, Digital Versatile Disc or Delayed Video Disc as

one wag wagged, is a medium that can't even decide on a name. To add to the confusion, just like the T1000 a DVD disc looks just like its victim. Yet within the next few years DVD will consign the long serving CD to the dustbin of technological history – or at least to the back of your music collection.

Over the next few pages we're going to investigate the mystery surrounding DVD. With the arrival of PC DVD (DVD-ROM) only weeks away, we'll put you in a much better position to interpret the hype and decide when move to DVD. For move over you will, it's just a matter of when.

What can a DVD disc do that a CD can't? Well, it can store a 133-minute Hollywood feature film on a single side. At its highest specification it could pack

the last two years' worth of CD REVIEW on to a single disc. And it enables software developers to include more and better footage in their multimedia products and games. (It means you would have just one Phantasmagoria DVD disc to throw out, instead of seven CD-ROMs.)

DVD won't stop at your CDs and CD-ROMs – it's going to make you chuck out your video collection too. DVD picture quality is almost three times better than VHS, and it's even better than Laserdisc. It can offer up to eight different soundtracks and 32 subtitles – you could learn new languages watching DVD movies! It can deliver images in multiple formats to suit different types of televisions, all from the same disc. It even lets studios incorporate multiple

DVD: The CD slayer



Your DVD doubts despatched

So what does DVD stand for?

Nothing, officially. Most people use either Digital Video Disc or Digital Versatile Disc. But since the industry is set on calling it just DVD and it's a lot quicker to say, who's complaining?

Can I play normal CDs from my DVD drive?

Yes. From the start, DVD has been a backwards-compatible technology. DVD entertainment systems will play music CDs, and DVD-ROM drives will happily read CD-ROMs. But you won't be able to play DVD discs on existing CD machines.

What's the difference between DVD and DVD-ROM?

Just as CDs come in two flavours – music CDs and CD-ROMs – so will DVD. The discs themselves are the same, it's the information that's stored on them that's different. DVD-ROM drives will be able to read either DVD-ROM or the other type, DVD-Video. A PC capable of MPEG-2 decoding should be able to deal with anything on a DVD disc. Obviously, a DVD-Video player won't know what to do with the latest DVD-ROM disc from Dorling Kindersley, though.

What sort of capacity will the first DVD-ROM drives offer?

Some manufacturers may offer just 4.7Gb drives at first. Flipping the disc will give you 8.5Gb. Toshiba's current drive, the SD-M1002, is already being fitted in tomorrow's PCs and it supports the dual-layer technology. It can therefore deal with DVDs up to the maximum capacity of 17Gb.

When will I be able to buy a DVD-ROM drive?

When we first started this article, we'd hoped to bring you a list of PC suppliers offering DVD models and specifications. Unfortunately, technology slippage has delayed the arrival of DVD-ROM until the summer. The first DVD-ROM drives in the UK will come fitted inside new PCs. External SCSI drives should start to appear in autumn. However, if you're after DVD for movies, then you should be able to pick up the first players any minute now. They're already available in Japan and America.

How much will a DVD drive cost?

Again, with no price commitments yet from manufacturers we can only

Just how does DVD do it?

DVDs work in a similar way to CD-ROMs. Not only are both discs exactly the same size (1.2mm thick and 120 mm in diameter), both store information in concentric circles of pits embedded in a reflective material (known in disc circles as the 'substrate'). A laser shone on to the substrate reflects back differently, depending on whether or not it hits a pit, and can thus read the reflections as binary data (1s and 0s).

Of course, DVD improves on this technology (it would look fairly silly if it didn't). Firstly, DVD uses a blue laser instead of the usual red variety. A blue laser has a narrower, higher frequency beam, which means

a smaller dot hitting the disc. This means the pits on the disc can be smaller (0.4 microns, to be precise) and packed more closely together.

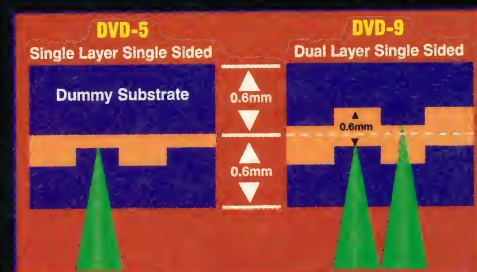
Moreover, while a DVD disc is 1.2 mm thick like a CD, it's made from two 0.6 mm substrates bonded together. This halves the distance between the surface of the disc and the pits. As a result, the laser doesn't have to penetrate as much plastic to read a pit, so it can be even more tightly focused, allowing the pits to be positioned even closer together.

In all, these improvements in pit-packing enable a DVD to store 4.7Gb of data, compared to the CD's maximum capacity of 640Mb.

There's more. Cunningly, the top layer can be partially transmissive, allowing the laser to penetrate to the second layer. This lets both layers hold information, (although the second one can't hold quite as much as the first). Such a double-layered DVD disc has a capacity of 8.5Gb.

Finally, DVD discs can be double-sided. (You read the other side of a disc is by flipping it over manually.) A final taxing piece of maths reveals a double-layered, double-sided DVD disc has a total capacity of some 17Gb.

Oh, and DVD drives spin discs faster too. But you probably guessed that already.



A partially transmissive first layer enables the DVD-ROMs drive's laser to penetrate to a second layer, which almost doubles the DVD's capacity.

▶ storylines or alternative scenes in a movie, allowing parents to select which film rating is appropriate for their children to watch. And it offers Dolby Digital Surround Sound AC-3 support, which boasts a much more realistic aural experience – for example, sounds that pan across the front of the room then fade in and out of the television or monitor.

In essence, DVD is based on similar optical storage technology to conventional CDs, but it does it all much better. A variety of hi-tech shuffles and shimmies enables the highest capacity DVD discs to store 26 times more information than a CD. That's 26 times more full-motion video, 26 times the number of entries in *Encarta*, 26 times more animation in any possible DVD *Toonstruck*. Furthermore, DVD is an enabling technology. While it will certainly improve existing multimedia, games and creativity packages, DVD will also enable the development of completely new PC and home entertainment applications.

DVD gets its phenomenal storage capacity from three key advances in disc and drive manufacture. Firstly, a DVD packs data more tightly on the surface of the disc, enabling more information to be stored. (If the

disc were blown up to the size of Moscow's Red Square, the individual binary pits would be no larger than pin-heads.) Secondly, it can be dual-layered. Beneath the top layer can go another platter of data, doubling the capacity. Finally, unlike CDs, DVD can be double-sided like a record. Flipping the disc over (or, potentially, fitting the drive with two laser beams) doubles its capacity again.

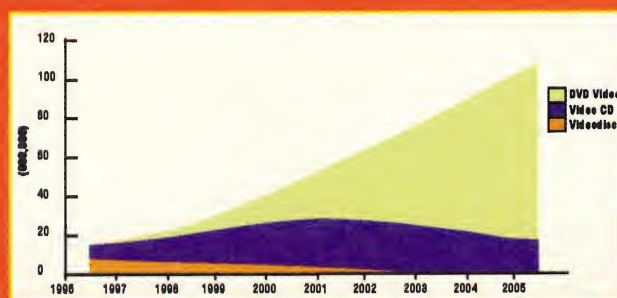
Where did such a sensible technology come from? DVD is the result of an almost unique alliance – several electronics companies working together to make sure the new storage technology succeeds (after the failures of Laserdiscs, MiniDiscs and the others). At the start of the 90s, the electronic giants like Sony, Toshiba and Philips were working on their own proprietary CD-ROM slayers.

Not only was each company replicating much of the other's work, it was also highly likely that the opposing formats would prove incompatible.

By joining two of these camps (and taking in a couple of strays) the DVD consortium was formed. Its aim was to hammer out a single standard that would define exactly what the storage medium to replace CDs ought to do. The eleven companies in the consortium (Kodak, Hewlett-Packard, JVC, Matsushita,

DVD Sales

Projected DVD sales towards year 2000 and beyond.



DVD formats

The permutations of layers and sides give rise to the following formats.

DVD Name	Layers	Sides	Capacity
DVD5	1	1	4.7Gb
DVD9	2	1	8.5Gb
DVD10	1	2	9.4Gb
DVD18	2	2	17Gb

LET'S CREATE WITH DVD

DVD isn't likely to have a great impact on everyday software in the short term. It's images and sounds that will most benefit from DVD, not storage space for executables.

In that vein, DVD will bring us bigger clip art libraries and music sample collections than ever before. It will also make the distribution of movie clips more practical, so we may start including public domain video footage in our creations in the same way as we'd use still images. And DVD will certainly be used to distribute software bundles. When you buy your next PC, all its bundled software might be installed from just one DVD.

It's writeable DVD (DVD-WO and DVD-RAM) that will revolutionise home creativity. Imagine being able to burn broadcast quality movie or animations in your own home! A couple of years and a couple of thousands pounds should see that dream realised.

Thomson, Mitsubishi, Philips, Pioneer, Sony, Time Warner, and Toshiba) all hope to profit from DVD in different ways. Drive and disc manufacturing are obvious money spinners, but supplying copyrighted DVD content and meeting the extra hardware DVD needs (such as the extra RAM and decompression chips required by movie DVD) are also potentially lucrative. Since these companies already make many of today's VCRs, CD-ROM drives, tapes and so on, they want to maximise their current investments, which might mean vested interests complicate the transition to DVD. But then the involvement of existing vested interests has led the consortium to make DVD backwards compatible with CDs, to avoid forcing people to replace existing CD music collections.

So when will we see the first DVD drives in the UK? Toshiba, Hitachi and others are shipping DVD-ROM drives in Japan at the moment, but no DVD drive-equipped PC is expected in the UK until early summer. But DVD-Video players – which can play music and movie DVDs – are already on sale in the United States and Japan, and a few have leaked into the UK. The first reports are that the technology is everything we've been

EVEN MORE MULTITUDINOUS MULTIMEDIA

If there's a PC application with everything to gain from DVD, it's multimedia. A persistent complaint of titles like *Music Central 97* has been the tiny amount of music (or video) that actually comes on the disc.

DVD will allow publishers to include much longer samples of music and video, and lots more of them too. A massive amount of the time and money spent on multimedia development concerns tracking down copyrights and paying royalties and you may as well make the most of it by putting, say, a full and satisfying early Rolling Stones single in your disc instead of 15 seconds of the chorus.

One impediment to adding more video is the cost of MPEG-2 encoding. It's not cheap, and customers are unlikely to pay much more for DVD *Cinemania* – certainly not ten times as much! This may be an Achilles Heel in the short term, although it will prove less of a hurdle as MPEG-2 encoding becomes more affordable.

All things considered, DVD-ROM will be a shot in the arm for multimedia. But it's vital that publishers concentrate on delivering useful new material on their discs, not just more volume. (Ominous mutterings have already been heard coming from those who've failed with CD-ROM). Like games publishers, multimedia publishers claim to be waiting for the market to grow before they'll commit themselves. But somebody must want to bundle their discs with those first drives...

led to believe: Great! The industry doesn't seem in a hurry to introduce DVD, though, perhaps because few people now doubt that DVD will succeed. As Toshiba Europe's DVD's Product Manager, Oliver Jochenhoevel says: "This technology will definitely not fail, because it is a mutually agreed world standard." Like many consortium members, Toshiba is optimistic. "Since the DVD



This is a DVD drive. You're not convinced are you? Its similarity to the ubiquitous CD-ROM drive is a big plus.

speculate. Note that there are two technologies to pay for here – the drive itself and the optional MPEG-2 decoding hardware. The drives only cost about £50 to £100 more to make than CD-ROM drives (say £250 in total), and that will fall as volume increases. An MPEG-2 decoder board currently costs in the region of £100 (but software playback via your processor or graphics chip might give you acceptable results without extra decoding hardware). Incidentally, a DVD-Video player will probably debut in the region of £500.

Will PC REVIEW be testing the various options for MPEG-2 playback in the future?

Yes.

Why weren't CDs double-sided? And where will the label go?

Herein lies an interesting tale. Nothing stopped CDs being double-sided, except Sony, which believed they wouldn't be as consumer-friendly as the single-sided alternative.

When the DVD consortium sat down to specify DVD, the same arguments were raised again. Sony and Philips believed a single-sided disc was the way forward, with dual-layer technology doubling its capacity. In contrast, Toshiba and Time Warner wanted to double the capacity of single-layer discs by making them double-sided. They eventually succeeded by arguing that the bonding technology needed to make double-sided discs was proven already with 12-inch video laser discs. Dual-layered discs were agreed upon too, which left everyone happy. Especially us, since it's combining the two standards that gives DVD its mammoth 17Gb maximum capacity.

Where will the label go? We don't want to spoil all the surprises.

Will I have to turn over the disc manually?

Almost certainly. Although it's technically possible to include two laser readers in a DVD drive, this would nearly double the cost. It would also make the drives much bulkier (perhaps too bulky to fit in a PC).

Okay, so DVD packs in a lot of data. So does magnetic tape. Just how fast is DVD?

You want numbers? Okay, both traditional CD-ROMs and DVD-ROMs spin at a constant linear velocity. CDs spin at 1.2m/s, which DVD easily outpaces at 3.9m/s. This partly explains the massive difference in data transfer rates. If you compare a single-speed CD-ROM drive with a DVD-ROM drive (which presently only comes in a single-speed version) you'll find CD manages a data transfer rate of 153K/s, which DVD easily outguns with a hefty 1.84Mb/s. (That's megabytes per second). Okay, so no-one uses single-speed CD-

Video quality compared

DVD SHOT



LASER DISC



VHS



DVD: The CD slayer



ROMs drives nowadays, but DVD still outpaces eight-speed drives. And you can be sure the technology will get faster.

Will I need a new PC?

While the first DVD drives will be built into PCs, external SCSI drives are promised by this autumn. So you shouldn't need to buy a new PC in order to get DVD. DVD drives will come with their own drivers, but further updates to Windows could be required to get the best from DVD, or to support desktop video playback. Crucially, Microsoft is committed to DVD and will support it across all its operating systems.

Will I be able to eat spaghetti off my DVD disc?

Strangely, if you consider all the hype we suffered about the indestructibility of CDs, no-one has said much about the fortitude of DVDs. Because DVDs are actually two discs bonded together, they're inherently stronger. In addition, a DVD is more resilient to changes in temperature and humidity, since both halves of the disc warp uniformly and symmetrically. In contrast, CDs can sometimes curl in unfavourable environments.

Whether they'll be playing frisbee with DVDs on *Tomorrow's World*, though, remains to be seen.

Is there any chance of DVD going on to join Betamax?

No. Since manufacturers have colluded to bring us just one format to choose from, market forces aren't getting a look in. Having said that, DVD might fail if it takes a particularly long time to become established, since that would leave room for a newer, even better format to step into the picture.

Are there any plans for writeable and rewritable DVD-ROM drives?

Yes. As well as DVD-Video and DVD-ROM, two other DVDs have been specified. DVD-WO (also known as DVD-R) is a variation of DVD-ROM that will support single-write recording abilities, like today's CD-R drives. The fourth variation is DVD-RAM, which enables multiple rewritable recordings, like magneto optical discs. Both are quite some time away – years rather than months.

Will PC REVIEW come with a DVD coverdisc in the future?

Not for a long, long time. Our disc editor has enough work already, without giving him another 16.5Gb to fill...

DVD ON THE GAME

What will sell DVD to gamers? Broadcast quality FMV at 25fps? More room for top quality animation? A decent soundtrack?

Many games veterans will be wary of DVD. They'll remember the introduction of CD-ROM and the subsequent rise of the Interactive Movie. Now, just as developers are realising that 3D and decent gameplay (a la MDK), is the way to our hearts, here comes an new medium to send publishers back to Hollywood, with their cheque books open and brains on hold.

But that's being pessimistic. Without CD-ROM, we would never have enjoyed games like *Sam & Max*, *Full Throttle* or any other *Myst* descendants. Who knows what new genres DVD might open up?

Most developers admit they're looking at DVD, but few are committing themselves. Sierra is tipped to offer *King's Quest VIII (The Mask of Eternity)* on DVD, which might make it the first DVD game. And it



Westwood will be able to create even better FMV when it releases a DVD version of *Command & Conquer* later this year.

will be interesting to see what Westwood's promised DVD version of *Command & Conquer* will do for the gameplay. "The commitment we are making to DVD is significant," says Brett W. Sperry, president of Westwood Studios. Meanwhile, video-heavy games like

Phantasmagoria 2 or *The Pandora Directive* already come on six or more discs. If nothing else, DVD should ease disc-changer's elbow, with publishers re-releasing existing titles on the new medium. And expect plenty of ten-for-the-price-of-one budget compilations too.

► consortium includes almost all major players in the computer and the entertainment industry, it is hard to predict who will win or lose," he says, adding "I personally believe that the market potential is large enough for everyone to win with DVD."

Not only are the drives easy to produce, the important media manufacturers can fabricate DVDs with only a few changes to their assembly lines. Perhaps just as important is DVD's wide range of uses. It's hoped that this huge market, which in essence replaces three media with one, will see the price of DVD machines dropping faster than the costs of other new technologies have done in the past.

Ironically, it's the usefulness of DVD to both home entertainment and PCs that's caused the biggest problems in bringing it to market. DVD's storage abilities open the door to a new era in piracy. For a start, traditional video pirates will have access to a better quality image to copy (although the resultant tape will obviously be much poorer than the DVD original). But what's really worried Hollywood is the widespread availability of DVD-ROM drives attached to PCs. Unlike copying on to a videotape,

unprotected digital DVD data can be perfectly copied on to a PC, without image degradation. With hard discs getting cheaper all the time, it's quite possible that a home user could copy large chunks of a DVD onto his hard drive, then transmit it wherever he pleased. Without encryption, writeable DVD drives (expected before the end of the millennium) will enable anyone to make perfect movie clones, something never before possible.

Delays caused by wrangles over how to beat piracy made DVD 1997's hot technology, when it might have come out last year. Hollywood demanded extremely tight copyright legislation, which PC makers feared would slow down the adoption of DVD and quash creativity. Its response was to create strong encryption. "Hollywood wanted a high-level of copy-protection," says Oliver Jochenhoevel. "The DVD copy protection technology is one of the safest ever agreed upon." (Most controversially, the super-tight encryption system includes territory lock-outs, which stop players made for one part of the world retrieving data originally destined for another.) The arguments



The Next Next Generation disc

Even as DVD hits the stores, scientists are working on a disc that makes DVD look as hi-tech as vinyl. As we've seen, both DVD and CD store information as minuscule pits on the surface of the disc. In contrast, a new system being developed by chemical giant Agfa will store data within the molecules of the disc surface itself.

The new disc is coated with a layer of photo-addressable

polymers (i.e. their structure can be altered with light). Agfa's special polymers also have side chains at regular intervals, like Christmas tree lights. When exposed to light, these side chains rotate into one of 36 positions, depending on the light's intensity.

Instead of the black/white binary pits of DVD, a disc coated with the photo-addressable polymers is made up of billions of spots in 36

shades of grey. "In our experiment we have stored many tens of gigabytes of information on one side of a disc," Dr Christian Van de Sande, Agfa's director of product R&D recently told *The Telegraph*. "We should eventually be able to squeeze hundreds of gigabytes onto the disc". But don't be put off by DVD. "We're looking at around 10 years before this could be on the market," he added.

MPEG-2: Squashing with style

They're still on sale, but Video CDs are already past their sell-by date. Video CD's main drawback is naff image quality – a fairly fatal flaw for a movie medium. The poor quality comes from the inherently limited capacity of a CD, combined with the inadequate compression offered by MPEG-1. DVD and MPEG-2 will offer a much better solution.

MPEG (short for Motion Pictures Experts Group) is a standard setting out how digital and audio signals should be represented on a disc, via compression. It states how data should be compressed, and how to decompress it again. Like DVD, MPEG aims to banish the spectre of competing standards. So far there have been two MPEG standards, MPEG-1 and the superior MPEG-2. (MPEG-3 was going to define High

Definition Television but someone beat them to it).

MPEG-2, which encodes the movies distributed on DVD, offers improved image quality and better compression than MPEG-1. It enables 133 minutes of Hollywood blockbuster to be distributed on just one side of a DVD disc – enough room for nine out of ten films ever made.

Obviously, before you can watch an MPEG movie it must be decompressed. To watch movies on your PC – or even enjoy in-game MPEG-2 visuals – your PC is going to have to do some MPEG-2 decoding.

There are three ways to do this. The best and most expensive solution is an MPEG decoder board (as you'll find in DVD-Video players and which costs around £150). Other methods include your PC's own CPU or a combination of its CPU and a graphics card. Current graphics cards, like ATI's 3D Xpression, already boast decent MPEG-1 decoding



DVD is capable of storing multiple camera angles of the same scene. So you could choose your favourite view when you watch it.



DVD movies can include subtitles in different languages. As a side-effect, you could learn Dutch through watching dodgy foreign films...

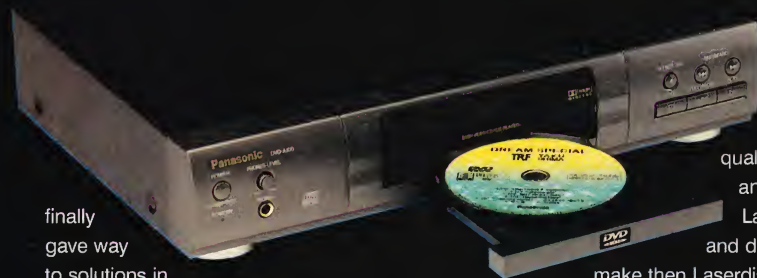
via a software image player. This takes advantage of hardware on the graphics board to perform some MPEG tasks like motion compensation (which predicts what an image will look like between frames, enabling a full 25fps image) and colour compensation.

"All we'll need is a software player for MPEG-2", claims ATI's UK Marketing Manager Harjinder Dulai, "Then our cards will offer an affordable MPEG-2 solution for DVD."

Alternatively, if smoother or less processor-intensive decoding is demanded, card manufacturers might begin to wire MPEG-2 chips straight onto their graphics cards.

A fast enough Pentium (perhaps a P200) and a suitable MPEG-2 software player might avoid the need for additional hardware altogether. Once again, though, the CPU won't be able to do much else while it's decoding the image and the results are unlikely to match those of dedicated decoding hardware.

DVD-Video players will arrive before DVD-ROM. This model's from Panasonic.



finally gave way to solutions in

December, just as the first DVD-Video players were hitting the stores in Japan and America.

It's a vital issue, because it's movies that will first sell DVD, and thus kick-start the DVD revolution. Anyone who has ever seen a Laserdisc player in action knows how poor video images really are. The trouble has been that the size of a typical movie is just too long to fit on to a CD. One frame of uncompressed video TV is around a megabyte in size, so without compression a single CD could only store 640 frames. With a standard cinema footage ticking over at 25 fps, this equals about 45 seconds of cinema action!

CDi players and Video CDs used MPEG-1 compression, enabling almost an hour of CDi footage on one disc. Unfortunately, the combination of MPEG-1 compression and the limited capacity of CDs results in severely reduced image quality and the introduction of strange visual effects – known as artefacts – on to the screen. That's why no-one's ever asked you for a CDi player for Christmas.

Laserdiscs offer a very respectable image, but they are much larger than CDs and they generally

require flipping halfway through a movie.

In contrast, a combination of

increased storage size and improved compression – MPEG-2 – enables nearly any feature-length movie to fit on one side of a DVD disc, at a much higher quality than that offered by VHS and surpassing even THX Laserdisc. Since DVD players and discs are much cheaper to

make than Laserdisc paraphernalia, DVD is the first media to realistically rival video cassettes.

Indeed, the video rental business is banking on DVD. Standard rental tapes cost up to £70 each, yet they quickly degrade and break easily. Just like CDs, DVD won't degrade and you'll have to do more than press Rewind awkwardly to break them. Of course, DVD is currently a read-only medium. Machines which enable you to record TV programs are quite a few years away. (To do this would require real-time

MPEG-2 encoding, which presently demands almost half a million dollars'-worth of hardware!) VHS is safe for now – as a comparison, think of the co-existence of cassettes and CDs – but once you've watched a DVD movie you'll never want to rent a cassette again.

Ultimately, the ability of DVD-ROM drives to play DVD-Video (and music), DVD-ROMs and CDs points at the integrated future of home entertainment products. Why have one drive sitting in your PC, another under your TV and a third to play music? It doesn't make any sense, particularly since you're unlikely to need, say, the PC if you're using the TV. How manufacturers crack this problem remains to be seen. After

all, Olivetti's PC for the living room, the Envision, sank like a stone.

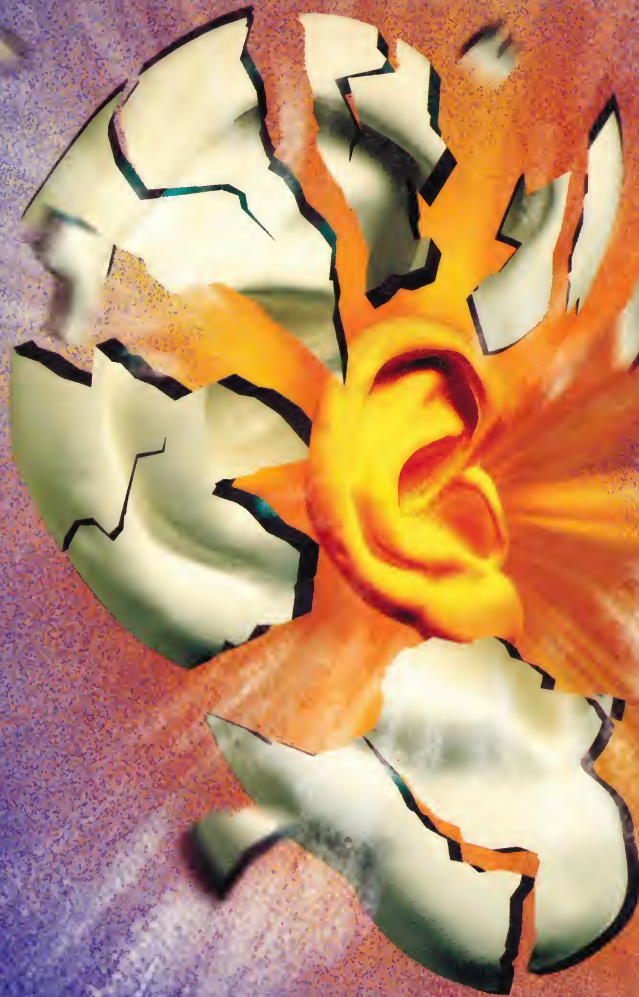
The final market for DVD drives is clearly enormous. Toshiba predicts that over 100 million drives will be sold world-wide by the year 2000, starting with some 500,000 in 1997. "We expect that DVD-ROM will replace CD-ROM by the year 2000."

So should you buy a DVD drive as soon as they hit the shops? No, you should wait for us to have a look at them first! Assuming there are no technical hitches with DVD-ROM, it's just a matter of waiting for decent content. DVD movies should appear almost immediately, so if you can plug your DVD-equipped PC into your PC, you'll have the best in home entertainment at your fingertips.

The first DVD-ROM software isn't expected until late this year, so we can't judge the content until then. But if you're comparing two prospective new PCs, one with DVD and one without, and the price difference is minimal, go for the one with DVD. You'll then have a PC capable of handling anything the future can throw at it. (OB)



Coming to a machine near you, Toshiba's new DVD drive promises to support the full 17Gb disc capacity.



We've broken the sound barrier

again



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EMU8000 Synthesiser
Creative WaveSynth/WG
SP/DIF digital output
Gold plated RCA output
Onboard RAM

AWE64 Gold

Yes
Yes
Yes (-120 db signal/noise ratio)
Yes (-90 db signal/noise ratio)
4MB (upgradeable to 12MB)

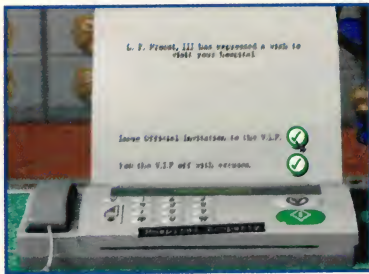
AWE64 Gold

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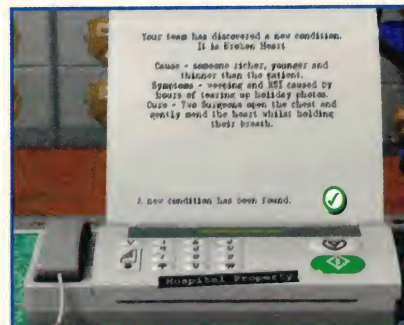
Click the mouse pointer on staff members to get find out their abilities, mood and energy levels.



Your crisis control comes in when VIPs visit, or after accidents and epidemics.



Numerous graphs and sub-menus let you check on your hospital's finances and staff situations. Here you find out the performance, pay and happiness of the doctors.



New conditions mean new cures, and often require new facilities. Luckily, broken hearts can be dealt with in the surgery room.

THEME HOSPITAL

Bullfrog finally adds to its Designer series, but is this latest Sim-styled game a cure-all or in need of serious surgery?

Appropriately, for a game about hospitals, nurses and doctors, *Theme Hospital* requires some patience to start with (ha ha). But then, simulating the day-to-day management of an overworked and under-resourced hospital was never going to be a walk in the park, no matter how humorous the presentation. There's always the potential to be overwhelmed by everything that's going on around you – but that's exactly the idea. The slight complexity that might put off novice players at first is also the secret to the game's success. *Theme Hospital* challenges you to stay calm under pressure, and it's a challenge that never wears thin.

Believably complex without bothering with the tedium of realism, this is best described as *ER* with comedy



Would you let these sort of people loose on your vital organs and inner psyche? It makes you glad to be on the management rather than one of the patients in *Theme Hospital*.

ailments in place of tangled relationships. The disorientating feeling that everything is happening at once is exactly the same, the difference being that this time you need to know how to orchestrate this potential disaster, rather than simply watch it unfold. And just when you think you've got this whole hospital

thing sussed, the game takes you that bit further up the learning curve. From learning the ropes of placing a reception desk and hiring staff, to expanding a money-spinning hospital empire, the scope for improving management skills and getting access to more interesting gadgets and scarier challenges just keeps on going.

While in real life a degree in business management and maybe the odd bit of medical training would be the first rung on the ladder, here the player is thrown straight in and given the task of building the actual hospital. Only the shell of a building is provided, so it's up to the player to handle everything from purchasing and positioning radiators and drinks machines to hiring staff and opening up vital diagnosis and treatment departments. Daunting.

An advisor is thankfully on hand in the tutorial mode as well as in the game itself. And with the first level featuring only the most basic diseases and hospital requirements, the descent into madness is thankfully a slow one. Which is just as well, given the shocking number of icons, menus, charts and gubbins featured. In reality, most of these can be cheerfully ignored for the most part, the important thing being to make a profit, keep the staff levels right, and make sure the machines don't break down. Providing you've designed a hospital that actually works, of course. The patients are a demanding bunch,



One patient leaves in desperate search of a free toilet, another is fed up because there are no facilities to treat his hair problem.

PLAYER



After more delays than an NHS hip operation, Bullfrog's *Theme Hospital* has finally arrived. It's pretty good, too, in contrast to another game that's taken years to arrive – *BattleCruiser 3000AD*. Perhaps Nova Logic has a lesson for these huge publishers. By focussing on just a couple of titles a year, it can concentrate its energies on quality not hype. This time it's offering *Comanche 3*, and it's caused a quiet storm in the office. Quality, not quantity, that's what we want.

Mark Ramshaw
pcreview@futurenet.co.uk

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Chicago no hope

A medical empire in the making.

Caretakers are vital for keeping the machines running as well as ensuring the corridors are clean. An untidy hospital can lead to pesky mice.

This is where the hospital grounds end at the moment, but the roads lead to other suitable sites on which to develop. You need to balance your funds carefully to buy extra property.



The research lab's up and running, while next door a GP diagnoses a nasty case of bloaty head.

There are 200 different types of patient in the game, and one or two are vaguely familiar.

It may not look like much, but this is the staff room. Maybe a radiator and some plants would give it a warmer atmosphere.



The level board – it's a long, slow, rather unhealthy journey to the final, central level.

so benches, drink machines, and sensible corridor layouts are all required to keep things ticking over. Even toilet facilities and staff rest rooms soon become a must.

Theme Hospital is a game where resources need to be balanced carefully and a smooth patient flow maintained. Every patient will have a place they need to go, and it's up to the player to juggle the human and mechanical resources to make sure that they can do just that. This means ensuring that your pharmacy nurse doesn't get so overworked she abandons her post. Which means keeping up research so that a newly

diagnosed case of invisibility or swelly head can be treated. And which means keeping the corridors clean so that rats don't begin infesting the place. It's all about prioritising tasks, using the budget wisely, and allocating those doctors and nurses efficiently. It's all about keeping an eye on a thousand and one things, basically. Plate-spinning has nothing on this game.

Everything described so far is pretty much par for the course with a management game, the only real difference being that hospitals are an even less sexy proposition than theme parks, ant farms and tropical

The animated intro gives the player some idea of the gravity of the situation in *Theme Hospital*. From medical emergency, to heroic hospital antics, to abandoning surgery because of the patient's financial situation, it's all here.



Construction time again

How to turn your medical dreams into a reality.



Step one is to lay down a blueprint, taking care to ensure the doors are placed sensibly, with extra windows to cheer up the staff.



The walls are built, so the next step is to install the equipment. This is to be a pharmacy, so you need a dispensing cabinet.



Finally, the staff. The pharmacy requires a nurse, one with the right skills and the best trade-off between cost and attitude.



It looks like some wobbling sort of virus is at work here – best get her diagnosed and the research department working on a cure.

islands. By rights, Theme Hospital should be as dynamic as a health minister, as tempting a dose of flu, and as exciting as the waiting room of a real medical establishment. But this is the world of Bullfrog, an occasionally magical place where gameplay is fine tuned, humour maintained, and user-friendliness is of utmost importance. Theme Hospital somehow manages to make operations funny, graphs interesting (well, almost), and the governing of men and women in white lab coats an absolute hoot.

Much of the fun comes down to the simple satisfaction to be had from balancing your resources well. And by wrapping all of the serious management stuff up with comedy illnesses, attractively clean visuals, and a sensible control system, the game can lure unsuspecting players into the world of decision-making before they know what's hit them. No matter how allergic to sim games you may be, the very sight of cute little doctors operating lethal-looking equipment is

impossible to resist. Throw in the way the staff really do adapt to their environment and current workload, and the sheer attraction of watching a hive of medical activity, and it becomes hard not to get involved.

There is a flipside, however. Because the people in the hospital are constantly going about their everyday business, you can quickly begin to feel overwhelmed. It's easy to keep an eye on the expanding empire in a game like Sim City, simply because the environment is a fairly static one. Here it's not so much the threat of earthquakes as the constant hubbub of the corridors and operating rooms that threatens to wear you down – the one area of Theme Hospital where it's that little bit less accessible than its rivals.

Yet Bullfrog's control system gives fast access to all the necessary building and staff hiring menus – ideal when that hi-tech tongue shortening gadget is needed in double quick time – as well as giving players the option to interfere with the running of the place in a more direct way. It's actually possible to 'pick up' a member of staff and drop them down in another area of the hospital, making redistribution of doctors far faster. And because these little lads and lasses are constantly reacting to their workload and the environment, such gentle nudges soon become vital. Overwork a nurse and she'll get tired out and need to rest in the staff room. Push her too far and she'll demand more pay.

Even worse, let inexperienced doctors loose on the trickier operations and you may find the patient waiting list shortening, but you'll also be giving the grim reaper another



Work your machines hard and they'll break down. An army of caretakers is needed to keep them in working order, as well as the funds to buy new ones as necessary.

excuse to pay the hospital a visit. Indeed, the sheer lunacy depicted by Theme Hospital helps you understand why the National Health Service is in tatters.

But really, that medical theme is little more than a cool way to hide all the number-crunching business and introduce a litany of sick gags and comedy illnesses. Broken hearts, fake blood, bloated heads and invisibility really are just the beginning. Later levels even introduce alien in-patients. It's this dose of cutting humour which gives the classic management game design a shot in the arm. There's a teensy feeling of disappointment on the later levels, admittedly, simply because the challenge gets harder rather than changes in any drastic way.

But the final diagnosis has to be that this particular treatment is a great cure for the god sim blues. Handle with care, though – Bullfrog has come up with a surprisingly addictive concoction. (MR)

BOING, BIING?

If you thought Theme Hospital's taste-free look at the world of the medical profession was one of a kind, think again. 21st Century is currently putting together its own hospital simulation, with the promise of added sex and lewder humour to spice up the scalpel and bedpan action. Biing, for that is its name, is due this summer.



Sex and death in equal doses, coming soon in the comely shape of Biing.

DEVELOPER
Bullfrog
PUBLISHER
Electronic Arts
CONTACT
01753 549442
PRICE
£39.99
MINIMUM SYSTEM
486/66Mhz, 8Mb
RAM, double speed
CD drive, Win 95.

PC REVIEW VERDICT
Occasionally confusing, but fascinating and highly contagious strain of the Sim genre.

8



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POD

Ubisoft's sci-fi racer has such an eye on the future it even includes MMX and 3D accelerator card support.

Racing games which forsake the reassuringly solid surfaces of highways and byways for uncharted worlds filled with futuristic hover cars or wheeled space buggies tend to lack a certain something. Without a (literal) grounding in reality, the nuances of real vehicle handling tend to spin out of orbit. Just look at the mess Bullfrog made with *Hi Octane*. Not only does *Pod* dare to go the sci-fi route, though, it also saddles itself with a chronically long-winded, utterly dull storyline. And an odd name. Which makes the enjoyable, knockabout gameplay all the more of a surprise.

The real thrust of *Pod* is that it supports the new MMX chip from Intel, or – even better – a 3DFX accelerator card, to improve the

graphical performance. Run the game through either one of these systems and you could almost believe you were playing some coin-op. Those who have to muddle through life with less spangly PCs would be forgiven for thinking that *Pod* is a no-go area for them, but Ubisoft has sensibly ensured that the game wallops along at a playable speed on most Pentiums. So long as you don't mind having less impressive scenery to drive past.

In this game, the scenery is all, with 16 racetracks each using radically different artwork. Skies range from positively apocalyptic to mildly windy; environments go from wreckage-strewn sewers to abandoned countryside and futuristic city streets, and the tracks get progressively sneakier – whacking in hairpins and jumps at the most inopportune moments. The jumps and bumps are actually some of the best aspects of *Pod*, sending the vehicles bouncing all over the place. It's a shame



With the inclusion of hills, jumps and roadside inclines there are plenty of opportunities for getting airborne.



POD running on an MMX-enhanced PC. The extra power is used to good effect, particularly with a greater palette for the textures.



The chase view is probably the easiest to get to grips with, though in traditional fashion there's also a cockpit mode.

more wasn't made of this element – sine wave-shaped tracks would've been great fun to race over.

But then there's every chance that a sine wave track will become available, for *Pod* is one Internet friendly game. Ubisoft has already begun posting new downloadable tracks and vehicles on a *Pod* site, and it's possible to race against other gamers via the site – which is excellent – as well as using the usual network and direct connection options. With such expandability, *Pod* gains pretty impressive longevity. And it's a neat way of side-stepping the problem that the initial range of vehicles in the game isn't particularly exciting or diverse.

The only real disappointment with the whole shebang is the feeling that, despite the spacey scenario, this is very familiar territory. While the scenery is thoroughly gorgeous and texture-heavy, the tracks themselves just don't pack the character of a real racetrack from *Sega Rally*, for example. And because *Pod* has forsaken the idea of power-ups and weapons in favour of pure racing, that's exactly the sort of game its going up against. In such esteemed company, *Pod*'s more sterile approach doesn't quite match up. It's stormingly good in multi-player, and a fantastic way to show off your new MMX chip or 3D accelerator, mind. (MR)



One of the best elements of *Pod* is its great expandability. New vehicles will be regularly posted on the Ubisoft Internet site for players to download.



You'll also be able to download new tracks from the Web page. Players can then string together a whole series of them for their own custom championships.



One downside of the sci-fi styling is the dull look of the vehicles. Most look more like skateboards than speed machines.

WHAT'S WITH THE TECHNOLOGY?

So, *Pod* works best when you've got an MMX or 3DFX chip in your machine. But what are they? Well, the Intel MMX processor is essentially an improved version of the regular Pentium processor with 50-odd new 'instructions' and a few other clever bits making handling of video and audio more efficient. The chips are fast becoming standard in new PCs, though you could consider whacking one in your current setup – see page 111.

The other route for getting the most out of *Pod* is to invest in a 3D accelerator card, more specifically one that uses the 3DFX chipset. The Orchid Righteous and Diamond Monster 3D are the most common boards available at the moment, with prices rapidly dropping below the £200 mark for either. Pretty much every new 3D game that uses Windows 95 will support these cards in some way, so there's little worry that you'll be stuck with a piece of kit that only works on your beloved *Pod*.

DEVELOPER

Ubisoft

PUBLISHER

Ubisoft

CONTACT

0181 944 9000

PRICE

£44.99

MINIMUM SYSTEM

P90 or P60 with 3DFX, 8Mb RAM, quad speed CD drive, Win 95, network and modem optional.

PC REVIEW VERDICT

Not quite the future of racing games, but a good way to show off MMX or 3DFX, and a manic speedfest even on a regular PC.

8



Now then, what was the final score the last time we played...?



Yes, the ref does need glasses. It was never a foul. It was way outside the penalty box. He's just faking. Someone else did it.

KICK OFF '97

It's got everything (nearly). It's got balls and it hasn't got Jimmy Hill. It's got Jim Rosenthal instead. It is Kick Off and, yes, it is 1997!



Kick Off '97, the sequel to the sequel. These days, though, the competition on the football pitch is pretty tough – can Kick Off still cut it?



...and through the round window we have the overhead kick. From the main menu you get to select your next footballing fixture.

The key to any sport sim's success is for the player to have the feeling of control. It's tricky, though, for developers to incorporate the immense numbers of different moves, tactics and nuances that are involved in any sport, which is maybe why there isn't that initial feeling of control with *Kick Off '97*. Most gamers don't want to have to read manuals and learn methods of play, especially for a sport sims.

And you'll need to be particularly wary of the computer opponents in the game, as they can easily steam-roll any newcomer to footie sims, resulting in exhibition matches – where you're the one made an exhibition of. The speed at which this game plays is blistering, with one-touch football that's a joy to watch. Unless you're the opposing team desperately trying to get possession, in which case you will end up hacking crudely at the

opposition and giving away foul after foul with the odd yellow card thrown in.

As you'd expect *Kick Off '97* is packed with a plethora of players and their stats, English clubs and national teams. So at least there is the opportunity to give yourself with a superior team while giving the computer a club that, technically at least, ought to be clearly inferior.

Unfortunately, it doesn't work out that way. No matter what third-rate no-hope team

you choose to play, the computer players still move at an incredible pace, easily shadowing any player of yours that happens to have the ball.

The controls are relatively simple and allowing you to use

either the keyboard, mouse or joystick with two main function buttons and combinations thereof. Moving around the pitch is simple, with four different perspectives for viewing

When the computer takes over it can play some spectacular, almost robotic football. At other times it's horrendous.

GETTING THE RIGHT ANGLE



This is the best view to play the game from.



However, there's always the spectator view.



You can check out the players' stats before the game. The lower the number, the better the player, just in case you were wondering.



You have the choice of five continents from which to select your team and players. The beauty of international football.

THE HISTORY OF FOOTBALL

Football was invented by the British but competitions were started by the French, only for the game to become dominated by the Germans. There's only the rest of Europe, North and South America, Australasia and any bunches of footballing scientists in Antarctica to go, then it's our turn again.



You won't get anywhere if you don't train but you can still play Kick Off '97.



the game via a 2D view like the one in *Sensible World of Soccer*.

All the options are there for you to change tactics as you see fit, including the ability to produce dream-teams from the players available – a wise choice if you want even a fighting chance. Real names have been used, and this adds to the game's appeal, even though it still doesn't make up for the software's many weaknesses.

These become more pronounced the more you play and it becomes apparent that there just isn't the degree of control required to make a good football sim a great one.

For a start, nearly all the computer opponents are able to run faster than any of the players you control and when you do have the ball the opposition players cling to you like a second shadow. One tackle and you're down – and you'll be swearing blind it's a foul, too.

Yes, it's all very well having the controls to produce great shots, lobbs and back-passes, but before you tackle any of this advanced stuff you'll be struggling with even

the most elementary moves – like trying to weight a simple pass.

However, it's not all bad news. The two-player option does make it a much more even and more enjoyable game – but that can be said about most games in this genre. You do have more control than *FIFA '97* but *Kick Off '97* lacks the feeling of power that *Actua Soccer* manages to convey. Although the graphics are really sharp, they're not the main factor in making a game like this work – the game's dynamics have to be right first, and the look of the game is just an added convincing factor.

Mind you, *Kick Off's* display is shiny, almost edible, with some professional-looking graphics really showing off the fluid movements of the players.

Unfortunately this polish isn't carried through to the AI aspect of the game. When the computer takes over it can play some spectacular, almost robotic, football. At other times, it's horrendous. While attacking you the computer players will suddenly start passing back until the ball is almost in the

back of their own net, yet even then you'll find it hard to score. The finer points of the game are very fine indeed, though. The better features include the ability to fire the classic cross into the box – whether or not you manage to get another of your team to connect with it, of course, is a different matter altogether.

Kick Off '97 really is a game of two halves. The players move smoothly and the graphics are of a high quality – all the teams and moves are included, too. The trouble is that you don't have the opportunity to perform half of the shots and passes that are possible. Even during Training, the computer strives to show you how much better it is. To be successful at the game you will need to either persevere like a good 'un or hype up your reflexes with so much coffee it makes your ears burn.

If you don't take *Kick Off '97* too seriously, though, you may be pleasantly surprised especially as it's competitively priced and rather good value, if only because of the two-player option. (JE)

DEVELOPER

Anco

PUBLISHER

Maxis

CONTACT

0171 505 1650

PRICE

£24.99

MINIMUM SYSTEM

486DX 66, 8Mb RAM, 50Mb hard disk space, double speed CD-ROM drive, mouse/joystick.

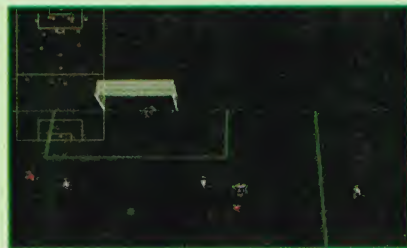
PC REVIEW VERDICT

A promising beginning that doesn't deliver the playability that most will require.

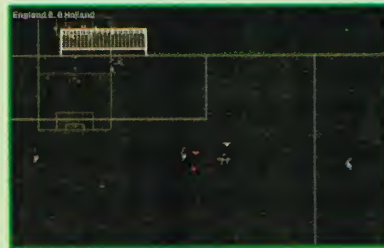
7



Then there's the dangling spectator view.



And then there is the eye in the sky view.



Sensible Soccer it ain't.



A LONG TIME IN THE MAKING...

Incredibly, the genesis of *BattleCruiser 3000AD* can be traced back to 1989, when Derek Smart first became entranced with *Jetfighter*. A systems programmer with no games coding experience, Smart struggled alone with the design, implementation, a variety of publishers and the inevitable problems of chasing technology over an eight-year period.

"Whatever your conclusion is," he says, "I have truly expended all efforts to attempt what may be as impossible as writing the Great American Novel."

BATTLECRUISER 3000AD

After more than seven years in the making, has Gametek's gigantic *BattleCruiser 3000AD* stayed on course?



From the outside (and at 8fps), our Cruiser, the warship Yaroze, looks like a spaceship fashioned from a hand-held vacuum cleaner.



The view from the *BattleCruiser 3000AD* bridge doesn't exude the drama and colour of a true space opera.

To begin with, like the doomed earthlings gawping at the City Destroyers in Independence Day, you can't help being impressed (and overwhelmed) by *BattleCruiser 3000AD* (BC3000). Here's a game that puts you in charge of not a pilot or grunt but an entire warship. You're some kind of future-day Conquistador, with all the troops, cash, mining drones and weaponry you could need. Unfortunately, it's all about as much fun as a six month scurvy-stricken trip to Uruguay.

For anyone who's played *Elite* or *Frontier*, BC3000 seems like a gift from heaven. Sadly, what looks like the freedom to control anything in BC3000 proves to be the necessity to grapple with everything. And while you can take advantage of a tutorial for the first mission, from the second mission on, you're lost.

Paradoxically, it's when you start to become familiar with the control system that BC3000's daunting complexity really hits home. Hardly anything is intuitive, and what is doesn't work as it should. Just one example, the graphical navigator, Navitron – lots of planets connected by lines. This being the year 3000AD, you can plot a course with the



Making your way from one end of the galaxy to another requires numerous space-hops. Realistic but hardly exciting.

mouse. But this being BC3000, you must position the cursor over the planet, then press <S> to set the destination. No button clicks here. Why? It's just one of a hundred inexplicable decisions.

Furthermore, there's no layering to the game. In contrast to *Civilization 2*, which shyly revealed its immense depth, BC3000 towers before you like all the world's telephone directories. Maybe this is what it's like to be Lorne Green on the *Battlestar Galactica*, but presumably he had some training first.

It might have been different. Perhaps you could have started as an Interceptor pilot and worked upwards. (Impossible here, since

dog-fighting is a dog). Or you might have had some advisers: "Shouldn't we be plotting a course for Mars, captain?" or, "We need to think about getting some drones working down there, captain". But no, you just get a sampled crew babbling in the background and shouting "low on power" every 20 seconds. Incidentally, both sonically and graphically, the game is woefully out of date.

Traditionally, though, this is the part of the review which says, "But, persevere and you're rewarded with a thoroughly engaging gaming experience." Alas, we found BC3000 progressively less engaging. You realise that success comes through fiddly planning and then sudden unwinding, like some crazy clockwork chess machine. You prime the Interceptors, assign orders then pop up above a planet and let rip. With luck you'll succeed, but you'll almost have to sit back and watch to find out. It's pretty dull.

And that's the biggest problem with *BattleCruiser 3000AD*. Its vacuous atmosphere still doesn't give a hint of the vastness of space, the smaller craft are almost impossible to control and it's all just too tricky and too much trouble. Nevertheless, all of this wouldn't have mattered if it had made you feel like you were commanding a magnificent battle-cruiser. As it is, you won't feel in charge – just overcharged. (OB)



A screen of spare parts cargo. Bored with menus and statistics? Then *BattleCruiser 3000AD* probably isn't for you.



You'll need to rotate your Interceptor pilots to avoid battle fatigue. You can also set their mission targets from this menu.

DEVELOPER
Gametek
PUBLISHER
Gametek
PRICE
£45

CONTACT
01753 854444

MINIMUM SYSTEM
Pentium, 8Mb RAM,
VGA, double-speed
CD-ROM.

She's gotta have
it? Well she's
welcome to it.

PC REVIEW VERDICT

5

1940'S HOLLYWOOD HAD A DARKER SIDE...

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Period photographic locations...



Six dangerous cases...



Missing P.I. Jack Slayton...



And a whole lot of trouble.

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Computer Gaming World magazine



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pure gameplay



A jaded orang-utan cop, a streetwise cat and a city full of crime and bullets – *Firo & Klawd* is not your average shoot-'em-up.

OLIVER, OLIVER

If *Firo & Klawd* plays a little like the sort of games they used to make, it's probably because it's the work of The Oliver Twins, two brothers who began their career coding budget games for Codemasters. Their most famous success was *Dizzy*, an egg-shaped chap with egg-shaped friends, who went on to star in numerous platform adventure games. Now they sure don't make 'em like that anymore.

FIRO & KLAWD

The first ever game starring a big ape and a streetwise cat fighting crime? And you thought the name was weird.

There's much to like about *Firo & Klawd*. It's one of those games with an old-style charm, a cartoon irreverence, and a console-style approach to accessibility, playability and structure. The brash cut-scenes and smooth scrolling rendered levels aside, it's almost possible to imagine this isometric shoot-'em-up appearing back in the heyday of the Spectrum and Commodore 64. Which isn't that surprising, since the developer is Interactive Studios, the team formed by famed Spectrum coders the Oliver Twins.

Klawd is the cat in this peculiar partnership, a cool feline unwittingly drawn into a world of crime. Which is where Firo the orang-utan comes in, being a wise-cracking, grizzled cop. A suitably loopy cartoon intro

conspires to bring the two together in a battle against the city's organised crime lords, and from there on in it's shooting all the way. With a bit of exploration and the odd first-person shooting sequence thrown in.

It's designed as a two-character game, so solo players get a computer-controlled ally (like in the Bitmaps' *Chaos Engine*). The trick works (particularly with the opportunity to switch between characters), though it's in two-player mode that the game comes alive, with strategies, fights for power-ups, and more of the mayhem that co-operative two-player modes create.

But while what's there is fun, there's not actually a whole lot to the game, the multi-pathway maps aside. This is simply a run, shoot, collect and shoot again affair. A disap-

pointing lack of accuracy in the hitting and getting hit department and an energy bar to cope with the frequency at which you get hit robs the action of much immediacy. And while a lot of work has obviously gone into rendering all the characters, the old-style VGA graphics and less than graceful goings-on mean much of it simply slips away.

There's definitely a need for PC games which provide unpretentious, console-style thrills. But there's something about *Firo & Klawd*'s lack of fluidity and the blocky visuals that conjures up memories of old PC arcade games like *Zool* rather than the shiny, modern breed. Pentium-owning types may just be a little disappointed then, but at least in the world of 486-friendly blasters, *Firo & Klawd* has more (fur)balls than most. (MR)



Many areas feature multiple levels, which does add to the game's complexity, but it can get a mite confusing when you're trying to avoid being shot. Which, generally, you are.



This may be a walk in the park, but it's no walk in the park. The fact that Klawd seems to be wearing jogger's attire doesn't seem to stop the villains recognising him.

PUBLISHER
BMG
CONTACT
0171 973 0011
DEVELOPER
Interactive Studios
PRICE
£39.99
FORMAT
PC CD-ROM
MINIMUM SYSTEM
486-66Mhz, 8Mb RAM,
double speed CD-ROM

A big bag of enjoyably old-school action, though lacking in finesse and subtlety.

PC REVIEW VERDICT

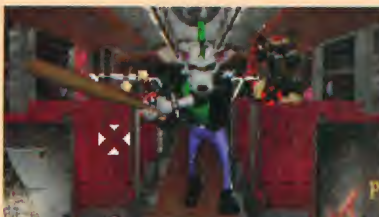
6

THE SUB-SUB WAY

It might add variety, but one of the weaker aspects of *Firo & Klawd* is the way that the main levels are broken up by a rather dull *Operation Wolf*-style 3D shooting game.



Having made it down the first street, our heroes head down into the underground.



Once you're on board the train the blasting action switches to a first-person view.



The last level is a showdown on Bojitt and Run's construction site.



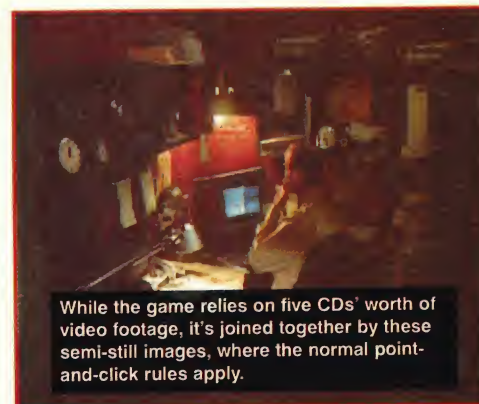
Up on the roof and the weaponry starts getting serious, with some nice console-esqe effects.



Could office dominiatrix Therese really be a flesh sucking fiend, or is Curtis having another one of his funny turns? The game keeps you guessing.



Creepy spookiness is used alongside flashbacks to Curtis's asylum days to build tension. There's blood too, but the psychological stuff works best.



While the game relies on five CDs' worth of video footage, it's joined together by these semi-still images, where the normal point-and-click rules apply.

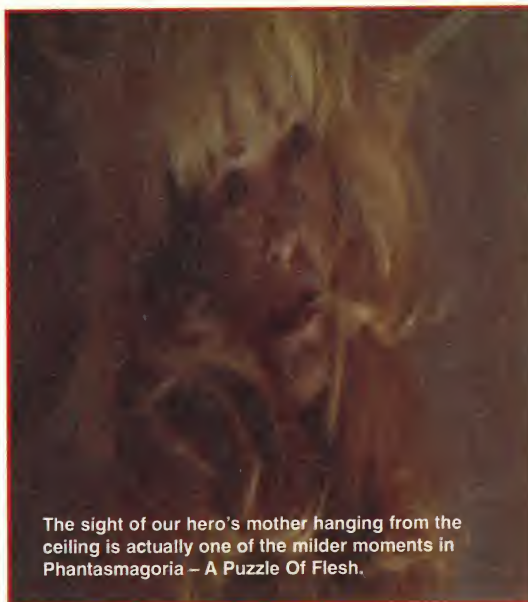
PHANTASMAGORIA: A PUZZLE OF FLESH

Sex, violence, insanity, even child abuse – Sierra isn't shy about upping the controversy factor with its latest adult movie adventure.

Sierra has announced its decision to quit its attempts to marry the words interactive and movie, so this will probably be the last filmic adventure game it produces. Which is probably just as well. Because, although this is easily the most atmospheric and cinematic movie adventure game to date, it also serves to highlight perfectly everything that's wrong with the very idea of blending video footage with adventure gaming.

Judged purely in terms of its ability to stir the emotions, *Phantasmagoria – A Puzzle Of Flesh* is a bit of a winner. While the first *Phantasmagoria* game featured creaky acting, even creakier blending of the actors with computer generated backgrounds, and less horror than an average *Sooty & Sweep* show, this is the real McCoy – a horror game that manages to be horrific. Obviously there are the stock camera tricks and surging bits of music used, but a lot of work has obviously gone into the script, ensuring that the shocking scenes really are shocking rather than simply gratuitous, and that the conversations are at least reasonably.

The story, which has our hero Curtis slowly descending back into madness a year after leaving an insane asylum, is classy,



The sight of our hero's mother hanging from the ceiling is actually one of the milder moments in *Phantasmagoria – A Puzzle Of Flesh*.

though pretty twisted stuff. It's not long before a vague sense of unease is replaced by genuine fright. Violent and packed with taboo subjects it may be, but the game knows how to milk the build-ups as much as the shock moments themselves. The loading delays and switches between high resolution computer scenes and grainy footage do spoil the effect

a little, but that's more the fault of the PC's technical limitations.

So, Sierra has succeeded in making a quality little movie, with a real script, real sets and real special effects. All lovely, but it's when the player begins to interact with all that footage that all the old problems return. Why, for instance, is it possible to totally ruin the sequence of events simply by asking another character about an item before engaging them in general conversation? Why are locations and events so obviously out of bounds until other tasks, that aren't even related, are completed? And why do players soon find themselves corralled into an utterly linear story? Because it's an interactive movie, that's why. You might as well just watch a horror video and stop the action every few minutes to solve some logic puzzles – you'd have as

much chance of altering future events.

Yes, *A Puzzle Of Flesh* really works as a horror flick. And the urge to progress is nigh on irresistible. Hell, even the puzzles are pretty good. But there's no getting round the fact that all the possible actions have been pre-filmed, meaning far less true interaction than adventure fans would demand. (MR)

ANOTHER DAY AT THE OFFICE

Much of the action takes place in the office. Here the conventions of the game are twisted slightly to allow you to dial the phone and even operate the computer in a vaguely realistic manner. However, it's a little unnerving when folders rename themselves 'cannibal' or worse, and voices on the telephone begin to scream 'murderer'.



DEVELOPER

Sierra

PUBLISHER

Sierra

CONTACT

01189 209100

PRICE

£39.99

MINIMUM SYSTEM

P75, 12Mb RAM, quad speed CD-ROM drive, mouse, Win95.

PC REVIEW VERDICT

Spooky, sick and expertly filmed, but still only slightly more playable than all the other movie-based adventure games.

6

Breaking those taboos

Why court controversy with one dodgy subject when you can broach a whole bunch of them?



First up, there are some reasonably unnerving asylum scenes – always using claustrophobic camerawork and spooky music.



Naturally there's a fair bit of murder thrown in for good measure, too. And a lot of swearing, just in case the images don't shock.



Or there's the good old fashioned sex element, here given some extra spice with a bit of sado-masochism/bondage. Nice.



DOUBLE THE FUN?

In an effort to make things a bit more exciting, *Grid Run* has a simultaneous two-player mode, where the screen is split horizontally across the middle. Sadly, it is still poor, and just makes two people miserable instead of one. Of course, due to the two displays things get enormously jerky when the two players meet each other, and it's hard to tell exactly what's going on. Horrendous.

GRID RUN

You've been captured by aliens and forced to play childhood games in a gigantic arena in space. Better run for it.

The story to *Grid Run*'s intro goes like this: space explorers find a huge, apparently deserted alien vessel. Intrigued, one of the crew boards it, but, uh-oh, it turns out it's not deserted at all. It is in fact a trap set by the evil Empress Vorga. Rather than killing her victims though, she chooses a crueler fate for them: they must become Grid Runners – or die!

Sadly you are not allowed to choose the 'die' option, and must take control of your space bloke who must quite literally run around some grids. To escape each maze you must turn a certain number of flags blue by running into them. Wait, it gets better. Each level is home to another Grid Runner, who wants to turn the flags red. This is where things start getting a bit bizarre. The only Runner who is allowed to change the colour of the flags is the one who isn't 'it'.

Yes, *Grid Run* is essentially the playground favourite It... with guns. To slow your opponent in his tracks you can shoot him, as well as using several magic skills. These use up your finite supply of magic (which can be replenished by collecting certain power-ups), and include the ability to create platforms in mid-air, teleport around the level, run very quickly and lay mines. Disappointingly, your enemies can never ultimately be killed, so usually the best tactic is to scarper sharpish.



Each monster comes complete with a little animated bit that introduces them. Sadly, in practice most of your opponents behave in exactly the same way.

Once you've completed the first stage you must defeat each opponent on two more mazes. When you have finished them off you get to do a bonus level (in which you run around an empty-ish maze collecting power-ups for later use), and then move on to the next alien world. Each alien has different powers and attributes, but due to the simplicity of the gameplay their tactics don't change much – they just charge after you letting off the occasional bullet.

After a prolonged bout of playing *Grid Run* you'll probably wish you could chase after the programmers and let off the occa-

sional bullet, because, quite frankly, it's very poor. The graphics are dull (apart from the occasional pretty backdrop), the levels are repetitive, and worst of all it's absolutely no fun to play. Frustration is rife too – if you and your opponent get caught in a corner of one of the levels then you can go for ages catching each other without the possibility of escape, and the only solution is to let your enemy get away and then catch him somewhere else in the level. Doh! Things are made worse by *Grid Run*'s lax design. Whenever your opponent comes on to the screen things get incredibly jerky. Dire. (TC)

After a prolonged bout of *Grid Run* you'll wish you could chase after the programmers and let off the occasional bullet.

DEVELOPER
Radical Games
PUBLISHER
Virgin Interactive
CONTACT
0171 368 2255
PRICE
£19.99
MINIMUM SYSTEM
486, 8Mb RAM, CD drive, Windows 95

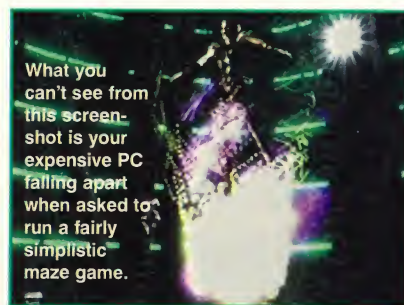
A strange concept poorly executed. Very irritating to play.

PC REVIEW VERDICT

4



Grid Run's graphics are all scaled sprites overlaid on polygon backgrounds, so there's lots of fancy zooming and all that.



Sadly *Grid Run* is absolutely nothing to do with Jeff Minter's C64 classic *Grid Runner*.



Atlantis

The Lost Tales

Don't forget
your passport....
...the local
authorities are
particularly
nasty.

PC Review:

"Drooled over Atlantis? Don't bother wiping yourself down.
Instead drool over it some more..."

"Atlantis mixes Cryo's trademark stunning visuals and
dreamlike atmosphere with new cuttingedge technology."

An adventure game for PC CD-ROM

Featuring



technology





TWO OF A KIND

For reasons known only to Wizards Of The Coast (but probably involving the amassing of large sums of money), the creator of the original Magic: The Gathering card system, Acclaim, has also gained a licence to produce a PC version of the game. Dubbed *Magic: The Gathering Battlemage*, it's superficially similar to the adventure section of the MicroProse title, using a real-time system and an overhead 3D viewpoint. Watch out for a review soon.



Acclaim's Magic game offers a less faithful, but more arcade-based take on the hit card game.



MAGIC: THE GATHERING

A fantasy card game has been the unlikely role-playing hit of the last few years. Now PC gamers can discover why.

This, by rights, should be a disaster. What is the point of translating a dumb role-playing card game to the PC, after all? Especially one that only operates in single player mode.

But *Magic: The Gathering* is not a disaster – anything but. Because the dumb card game is in fact one of the most carefully crafted and deceptively complex role-playing experiences around. And as for only supporting one player matches – well, if there

are two of you, why not just go and buy the real cards?

Explaining how the game works is a lot harder than playing it, but here goes anyway. Two opponents (that's you and the computer enemy, in this case) each have a deck of cards based on one or more of six themes. Each theme pertains to a kind of magic and has its own colour, so a red deck will be based around earth and fire (generally inspiring chaos and combat), while a green deck

refers to magic gained from the forests, so the serenity and destruction of nature are where it's at. So far, so colour-coded.

But then it gets a little weirder. Each deck actually contains several different card types, creature cards, spell cards, or basic mana-holding land cards. Mana cards are used to power the other card types, to bring a creature into existence or cast a spell – be it the kind of magic that strengthens one of your own creatures, attacks the enemy, or



Once you've got the idea of which colour and which cards do what, it's possible to mix and match them all up to create your own dream deck.



Right in the midst of a battle, the player has used magic spells to bring two recently killed creatures back to life.

Here's the Deal

In addition to the regular duelling of the card system, the game gives players the chance to explore the land of Shandalar. Here quests can be undertaken, villages visited and enemies challenged.



The main terrain map. In all its slightly medieval-looking glory. Our player can be seen trying to run away from some bloke dressed in a green cape.



He turns out to be an elvish mage, demanding money. Instead it looks like a fight is on the cards. This is where all that experience with the duelling section comes in handy.



Having survived his puny attack, our player reaches the nearby village. Here it's possible to improve the current deck, as well as buy supplies and accept new quests.



Choosing to spend some of the gold coins, our hero purchases a couple of new cards for the deck. You never know when they may come in handy.



The game comes with this handy video tutorial. The performances from these two artistes are actually pretty good.



The main playing screen displays all creatures and spells in play, as well as the cards currently pulled from the main deck.



Some spells are directed straight at the opponent, and when creatures are told to attack, they aim for the other magician.

gives you a certain kind of mana bonus. So, to create a pretty humble beast may need just two mana cards, while the better creatures and spells may require several bits of mana, and different combinations of mana type. Still hanging in there? There's more.

The game works in turns, you see, each comprising several stages. So, in a turn each side will get a new card from the deck, have the chance to attack the opponent using any creatures, be able to cast any available spells, and may be required to come up with a defence against the other side's offensive. It's also possible to dump any held cards into the graveyard (so long as you have at least seven in your hand already), which brings about the promise of a new card from the deck. Which really means that *Magic: The Gathering* is all about using mana resources wisely, anticipating what cards will come up next, and understanding the need to lose some battles in order to win the war.

It really is easier than it sounds. Except that there's also the special abilities given to some monsters to take into account, plus the paper-scissors-stone element that means some bigger monsters can be defeated by weaker types under certain conditions.

But, just in case the lengthy instruction manual fails to put across all of the clever

elements of the rules system successfully, MicroProse has thoughtfully included a video tutorial section. The acting is actually quite neat, and seeing this pair of overdressed loons go through the stages of the game step by step really does clear things up.

Which isn't to say that winning is that much easier. This isn't the sort of game to suffer fools gladly. It's very likely that the first day or so of playing is going to result in defeat. But it's always obvious that early defeats are down to lack of experience more than anything, so the urge to persevere becomes all the stronger.

MicroProse must have worried about the appeal of playing a card game on the PC, despite the inclusion of all the attractive art that the original packs are so famous for. This is why the standard one-on-one duel has been supplemented by a sort of graphic



The wonderful artwork of the card game appears in the PC version.

adventure section, where players get to wander the land of Shandalar, battling it out with various fantasy creatures – using the Magic card system – and doing all the sort of character building quest stuff that these games always insist on. Only the graphics depicting the journey through the land let things down, resembling a late 80s Amiga game more than anything.

And that's pretty much it – a pretty complex card game made all the more simple thanks to a well thought out tutorial, and fleshed out with an enjoyable if slightly pedestrian looking adventure. Really though, it's those cards and the strange – some might say mystical – set of rules which bring them all together. It soon becomes all too easy to understand why the card game has become such a sensation over in the USA. Think *Dungeons & Dragons* with all the messy statistics and dice nonsense removed, but with a multitude of extra subtleties added simply through the way the cards relate to each other.

Magic: The Gathering is one of the most blindingly good strategy games ever devised. And you don't even have to own an anorak to enjoy it. (MR)

CD REVIEW

You'll find a demo of *Magic: The Gathering* on our cover CD. Hurrah.

DEVELOPER
Microprose USA
PUBLISHER
Microprose
CONTACT
01454 893893
PRICE
£39.99
MINIMUM SYSTEM
486/66Mhz, 8Mb RAM,
double speed CD-ROM
drive, Win 95, mouse,
all major soundcards

PC REVIEW VERDICT

The adventure section looks a bit rough, but the formula behind the card-based battles is superb.

8

It's always obvious that early defeats are down to lack of experience more than anything, so the urge to persevere becomes all the stronger.

STAR TREK[®] GENERATIONS

This world's first ever review! Journey with us as we explore MicroProse's masterpiece.

Plus! Star Wars. Huge look at X-Wing vs TIE Fighter – the most eagerly awaited game ever.

April issue on sale
Wednesday 26 March

PC GAMER



The second game takes a first-person view of the action at Dulles Airport – terrorists are everywhere.



Die Hard Trilogy uses Direct 3D, and so makes use of any 3D accelerators – a 3DFX card in this case.



You need a fair bit of strategy in the first game. Wading in, guns blazing, isn't the way to stay alive.

DIE HARD TRILOGY



Take one movie licence into the shower? With Die Hard Trilogy you can just shoot and go. And shoot again. Then drive for a bit.

Fox Interactive begins the inevitable trawl through its classic movie collection, tackling three of its blockbusters in one go.

Chances are, if you're a fan of video games then you're a fan of the *Die Hard* movies. The Bruce Willis flicks are practically big screen shoot-'em-ups, albeit ones with top drawer one-liners and brutally relentless pacing. And yet, if *Die Hard Trilogy* were to be judged on first impressions it'd probably be struggling to get a PC REVIEW rating of 4. And that's being generous because of the heritage. This game is very nearly *Die Hard Travesty*.

It's the roughness with which it's been put together that beggars belief, from the maze-like menu screens onwards. Each of the

movies is given its own individual game treatment, and each one smacks of sloppiness. Take the first chapter, based in the original movie's tower block. The viewpoint really shows up the messy clipping of walls, done to avoid obscuring the view of our hero John McClane. And then there's the way the actual characters are drawn. It's as if they've been made of bits of paper and stuck together. They animate badly, they don't look at all 3D, and they look like they'd rather be kicking around in a photocopier advert.

The same technique is used in the second game, where McClane gets to blast at bad guys in and around Dulles Airport. While the first section vaguely recalled *Doom* and *Tomb Raider*, this bit is a dead ringer for *Virtua Cop*. The only real differences are the ability to move around the central viewing area, and the neat way the scene zooms in on a bad guy when he's in the guns sights.

Part three, based on *Die Hard: With A Vengeance*, puts the player in control of a car,

with a mission to speed around New York in pursuit of a load of bombs. Say hello once again to the flimsy paper people, here all the more noticeable because they get absolutely everywhere. And if they don't appal you, then the fact that even a mid-range Pentium will struggle to combine decent resolution and a decent frame rate will.

Problem is, there's just enough here to make all this almost, though not quite, forgivable. Certainly any of the games in isolation isn't worth forking out for alone. But then that's exactly the idea of packing three of them in. And *Die Hard Trilogy* packs a hell of a lot of bangs per buck. The first section proves spookily good fun once the art of taking cover and releasing hostages at the correct times has been discovered. Even the *Virtua Cop* action of the second instalment hits the spot, the numerous power-ups, constantly changing environment and ability to blast the crap out of the scenery all proving most welcome. And the third section, while featuring a complete lack of anything to do beyond blast up and down streets, somehow manages to capture all the pace and tense against-the-clock action of the movie.

And then there are the tacky-but-fun voices of McClane and various others, the sick sense of humour that allows you to mow down pedestrians, shoot hostages, and grenade innocent bystanders. And the visuals, raw as they are, evoke the scenes from the movies pretty well.

Given the all-round wonderfulness of the *Die Hard* movies, it's a shame that the video game version couldn't have been equally polished. But, despite its many faults, *Die Hard Trilogy* proves simply too enjoyable to be written off. Sometimes gaming fun can be found in the strangest of places. (MR)

WILLIS

Not content with sort-of-appearing in *Die Hard Trilogy* (it's not really his voice and we never get to see his face), Bruce Willis has been signed up to star in a purpose written PC game. Called *Apocalypse*, it's coming from Activision, and you can bet it involves shooting things together with long, lingering close-ups of Willis's rippling and subtly oiled scalp. Or body.

DEVELOPER

Probe Entertainment

PUBLISHER

Electronic Arts

CONTACT

01753 549442

PRICE

£39.99

MINIMUM SYSTEM

486/66, 8Mb RAM, double speed CD drive, Win 95, mouse and joysticks supported, all major soundcards.

PC REVIEW VERDICT

Messier than the Bruce Willis vest at the end of a *Die Hard* movie, and yet rattling good fun. Go figure.

7



Chasing round New York in search of bombs is a crazy idea, but McClane is a crazy guy. It makes for a pretty tense gaming experience.



The simplest but most enjoyable section has to be the one based on *Die Hard: With A Vengeance*. Pity about the pedestrians...



The *Die Hard 2* action moves from the airport to the enemy base. Notice how the snow textures fail to join together properly. Just one of many niggling presentation faults.



NEW VOXEL

Nova Logic has completely overhauled its Voxel Space graphic engine. Aided by Dolby Surround Sound, it brings a massive variety of landscapes into the frame.



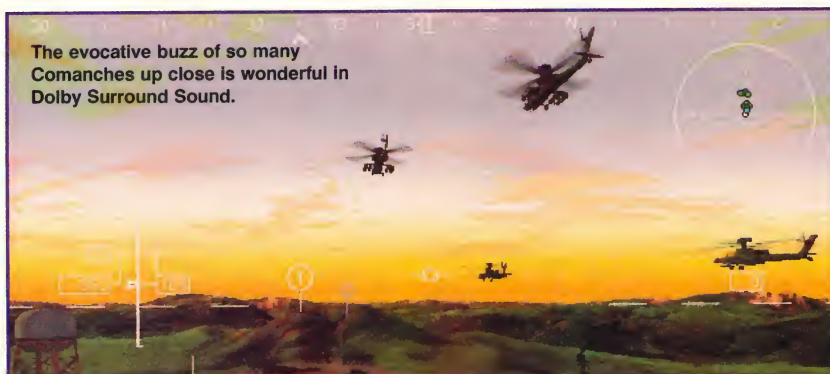
Shades of a dozen Vietnam war films in this verdant, nameless landscape.



The frozen wastes at sunset cause Griffon 26 and Griffon 27 to ponder the futility of war.



In the night, the world looks green from the air. You'll notice the same effect if you go on a long-haul overnight flight.



Another Comanche attack goes horribly wrong. Boeing-Sikorsky must be raking it in.



The rotors pick up fire from a passing cruiser. Every part of the Comanche can be damaged.



COMANCHE 3

War's an ugly business – unless you're playing **Comanche 3**. Then it's a cinematic flying thrill with booming Dolby Surround Sound.

Comanche 3 is like a flashback to a war you never fought in, filmed by Francis Ford Coppola. You rise from behind a ridge, then sweep down onto an armoured convoy like a propeller-headed Grim Reaper. Or you begin a mission on full alert, and the skies bristle with friendly helicopters in some childish vision of camou-

flaged public transport. Or you and Griffon 26 (your team mate) run along a frozen canyon, and the temptation to select the fly-by external camera is irresistible.

Graphically, *Comanche 3* made PC REVIEW's art team swoon – always a reliable barometer. The landscapes are wild and vary from icy wastes at sunset to green valleys at

night. Trees and a judicious sprinkling of stones add depth, though of course there are no real forests.

You might think the engine would benefit from the slower speed of choppers compared to jets, with the world breezing lazily

NEXT MONTH
we'll feature a demo of
Comanche 3 on the CD.
Don't miss it.



A designated target is tracked from the cockpit screen (bottom left). You can either take him out or leave him for your team mate.



Sometimes the missions are so challenging you'll feel an urge to go crazy and shoot up your own base instead.



It's sunsets like these that will have you reaching for the mirrored shades. *Comanche 3* is Airwolf wish fulfilment.

by. But the Comanche's need to hug the contours of the land and attack at close quarters actually increases the demand placed on the engine. Unlike some flight sims, there's no shooting at phantoms more than 20 miles away here. In *Comanche 3*, the enemy's always in sight.

With rotating gun turrets and funereal smoke, close-up combat is pretty. It's also deadly. The Comanche has a limited but devastating arsenal, encompassing fire-and-forget stingers and hellfires (for air and ground targets respectively), unguided rockets for near fighting, a devastating cannon that independently tracks its target and even the option to call in artillery bombardments. Once you've selected a target, it appears on an infra-red camera view on your cockpit display. Loose a hellfire and suddenly the screen's blank.

The on-screen data is always useful but never overwhelming. Unlike jet pilots, Comanche pilots get their heads-up style data delivered to a small monochrome (called a Helmet Integrated Display), which enables you to look left or right or even go full-screen without losing the altimeter.

Specially designed to be simple for military pilots to fly, you'll soon get to grips with the Comanche. Features like an altitude lock and stabiliser mean the usual helicopter difficulties – like managing both consistent height and speed – less of a chore. If you've never flown a helicopter before, it's an ideal introduction to the arcane world of collectives and cyclics. If you're a veteran, you'll revel in the freedom and hyper-realistic

flight model (which was designed in conjunction with data from Boeing-Sikorsky, which builds the real Comanche).

Indeed, the final beauty of *Comanche 3* is its sense of balance. Where certain Nova Logic excursions have been gloriously boring, there's always something's happening here – from military radio banter to distant booming guns or an unexpected run-in with an enemy helo patrol. Missions are varied (though always difficult) and with more than 30 of them, *Comanche* will take a while to finish. When you do, you can move on to the multiplayer missions, which look like taking co-ordinated network gaming to new heights. In every sense, the view is certain to be impressive. (OB)

DEVELOPER

Nova Logic

PUBLISHER

Nova Logic

CONTACT

0171 405 1777

PRICE

£39.99

MINIMUM SYSTEM

P100, 16Mb RAM, 16Mb hard disc, double-speed CD drive

PC REVIEW VERDICT

Looks and sounds beautiful, and plays like a violent dream. It'll make you show off your PC.





G-NOME

G-NOME. A strange name for a strange game, or just an obscure reference to a much-ridiculed garden ornament?

MARGIN NOTE

Two races dominated the *Phygos* system: *Scorp* and *Humans*. With tensions increasing between the two sides the *Scorp* created the *G-NOME*, a genetically engineered fighting machine. This was most probably developed by experimenting on human POWs. For humans to reveal the *G-NOME* project would be to expose undercover agents within the *Scorp* government. A situation that only Joshua Gant can rectify.

DEVELOPER

7th Level

PUBLISHER

7th Level

CONTACT

01932 355666

PRICE

£39.99

MINIMUM SYSTEM

P90, 16Mb RAM, 30Mb hard disk, quad speed CD drive, mouse or joystick

Quality graphics and in-depth levels will reward those with the spec to handle it.

PC REVIEW VERDICT

7

It wouldn't take a genius to see the comparisons that can instantly be made between *G-NOME* and *Mechwarrior 2: Mercenaries*. Yes, they are both futuristic robotic shoot-'em-ups. Yes, they both contain American literature within their packaging and manuals. But only *G-NOME* boasts voice-overs by a man who's a cross between Dick Van Dyke and *Crocodile Dundee*. Still, it's hard to say whether this is a benefit to the overall quality of the game.

Whatever, having survived the ramblings of the Australian faux-Cockney you can swiftly move on to the game itself, opting either for Training, Mission or Campaign. The well designed display allows you to move about the game to view the weapons, vehicles and other characters. Alternatively, you can simply decide to change the numerous keypress functions. In fact, there's even the facility to adjust the keys so they are set the same as *Mechwarrior 2* or *EarthSiege 2*.

Having mastered, or at least memorised, the controls you can become embroiled in the galactic fracas that exists in four independent territories. In single-player mode you are Joshua Gant – the hero of the story, a man with a tragic past and an over-active conscience desperately trying to rid himself of the memories of 10 years ago when he lost Ron Pearl, his best buddy. Now it's time to avenge his friend and punish those that have caused him to waste a decade.

The game itself progresses nicely with a simple first campaign which extends into a more complex mission, and with three difficulty settings it caters for most standards of player – the training option helps the true novices to find their metallic feet. Moving about the game is a simple process of accelerating and pointing Gant in the right direction, although having commandeered a Heavy Armour Weapons Chassis (HAWC) you have the fiddly job of controlling the



G-NOME's graphics are of a very high quality, but you can always reduce the resolution if your PC's having trouble coping.



The internal view from the HAWC gives you all the information you need. To access the mission map, press [B].

machine as well as moving the head that turns independently. A problem which most will soon get to grips with.

Just by the sheer nature of the game's requirements the graphics are of a high



With the external view you can see into the distance but you will need plenty of skill to aim accurately from this angle.

quality with the option to reduce the resolution if need be. The cockpit view of the HAWCs is well designed with most of the relevant information shown clearly, especially the Holo Displays which are miniature models of your HAWC and the enemy to show damage – a nice touch. The AI shows good general intelligence, with the enemy actually attacking you without provocation, a novel idea that forces the player to decide on tactics before wading in. Unfortunately the computer characters do have a habit of taking the most direct route towards you, obstacles or not, and sometimes get themselves stuck.

The inclusion of eight player LAN and Internet play makes *G-NOME* a lasting game that has been well constructed and, via the networks, it will mean many more man-hours lost to deathmatches. (JE)

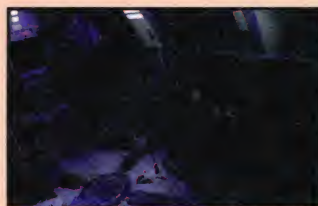
The scene is set for some G-noming action



The recurring nightmare of that fateful day, 10 years ago, begins (in full motion video).



Joshua Gant wakes in a cold sweat after his dream and curses himself for falling asleep again.



Gant gets up and walks to the door muttering: "Today is a good day for the Scorp to die."



CRICKET

Dicky's bird and their googlies litter the vocabulary of the game. It could only be Cricket 97.

97

Now this is not a game that's had much competition so EA was in the fortunate position of cornering a market – assuming, of course, the company could produce a decent enough game.

There have been other cricket sims on other formats, but no notable games have graced the PC to date. This is set to change with EA's offering.

Actually playing the game is quite simple – if you know your cricket – with the joypad being the easiest method of control and the batting handled using the eight directions of the pad. *Cricket 97* employs an easy to get-to-grips with method and leaves no player in doubt as to which shot is being played.

Controlling the bowler is slightly more complex but it doesn't take too long to become used to it. You just decide on the type of ball you want to bowl and then decide where to pitch it – practicing this does make all the difference otherwise you'll find yourself being humiliated in front of a home crowd. Art



Wise advice and comments are supplied by the commentator Richie Benaud and his side-kick Ian Botham.

imitating life perhaps?

Simple options and well designed AI give the game an instant appeal with progress being made the more you play the game and become familiar with the controls and the pace of the action. A two-player option gives *Cricket 97* added longevity and will appeal to many sport sim addicts. Due to the very nature of the game *Cricket 97* may seem too long winded but with the dulcet tones of Richie Benaud doing the commentary and the three high quality

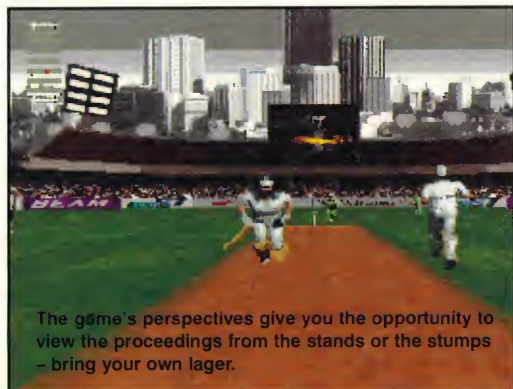
view perspectives the game deserves to succeed where many have failed. (JE)



The game is set abroad where the sun is shining and there's little prospect of rain delaying play.



It may be the only way to beat the competition but at least you can control England's destiny.



The game's perspectives give you the opportunity to view the proceedings from the stands or the stumps – bring your own lager.

PC REVIEW VERDICT

All Cricket games are not the same and this is one of the best to date.

8

DEVELOPER

Melbourne House

PUBLISHER

EA

CONTACT

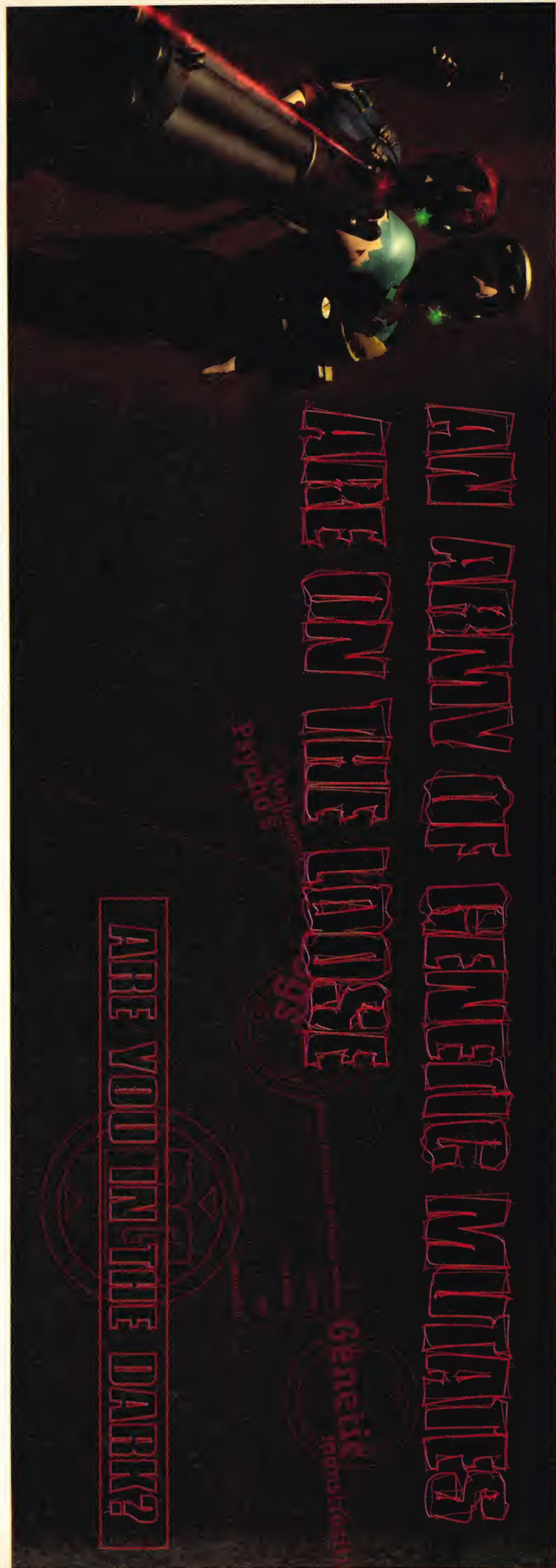
01753 549442

PRICE

£39.99

MINIMUM SYSTEM

486DX2 66, 8Mb RAM, double speed CD drive, 5Mb hard drive, 1Mb SVGA video card





STREET RACER

With a cartoonish approach that owes much to Mario Kart, Vivid Image's conversion of its hit console game promises four times the fun.



BIGGER, BETTER, MORE
Can't wait for another cartoon racer from developer Vivid Image? You'll be glad to know that the veteran development team is already hard at work on another 3D car title, this time using a full 3D system. Rumour has it that the star of the game will be none other than Street Racer's Hodja. Keep your eyes peeled for more info.

DEVELOPER
Vivid Image
PUBLISHER
Ubisoft
CONTACT
0181 944 9000
PRICE
£39.99

MINIMUM SYSTEM
486/66Mhz, 8Mb RAM, double speed CD drive, Win 95 supported, joystick, all major soundcards.

Not quite the PC's answer to Mario Kart, but top of the PC karting heap and a multiplayer hoot to boot.

PC REVIEW VERDICT

8

It's possible to have up to four humans racing against each other, all on one PC. The choice of contestants is still highly bizarre...

Managing to be both brand new and retro is a tricky thing, but *Street Racer* isn't a game to take the middle of the road. That's why some thoroughly classic gameplay has been encased in a graphics engine that initially fails to impress, but actually opens up a whole bunch of possibilities. Like speedy game performance on humble PCs, and – most impressively – like the ability to have four players racing against each other on a single PC. You'll believe a racing game can go like the wind even when using split-screen or quarter-split viewing modes.

Even so, there's a nagging feeling that *Street Racer* isn't quite out there on the cutting edge, something that's no doubt due to the fact that it's been translated from a Mega Drive title. This is the sort of game heritage which could freak some PC types out, but who really cares so long as it plays well? And play well it does, working very comfortably as a single-player experience, but really coming into its own as a multi-player clash. There really is no substitute for the joy of thrashing another human at a computer game, particularly when it's a game laced with liberal amounts of speed, room for strategy, and just a touch of weaponry and violence. Offering gamers the chance to drop the racing pretext and duke it out in a rumble game is a smart move, too.

The well-travelled gamer will no doubt realise that *Street Racer* is in fact heavily influenced by the Nintendo game *Mario Kart*, but given that this was one of the best video



The four-way split screen mode is very speedy, and in high resolution the clarity really is excellent. It's the carnage that springs from having four people battling it out on one machine that really works wonders, though.

games ever, that's not such a bad thing. And while *Street Racer* ultimately lacks the same cartoon attraction or the peerless combat mode of that game, the simple fact is that it's not a game available on the PC anyway. So instead *Racer* should be compared to the likes of *Manic Karts*, which it pummels into the ground with great ease.

All this is really just a fancy way of explaining that there's not really very much to explain about *Street Racer* at all. You drive funny little characters in funny little buggies with funny little weapons around funny little tracks. And give or take 101 ways to modify



Even with all the detail and resolution settings at minimum, the game still looks reasonable. And it makes the game smooth even on a 486.

the viewpoint, choose the number of laps, select the tracks, and collect power-ups that's pretty much it. The trimmings are the sort of thing developers sometimes put into game when they're worried that the main concept is too slim. And that's probably why *Street Racer* comes with a free joy-

pad too. But really it doesn't matter that this isn't as complex as the *Formula One* games of this world, as immersive as the *Nascars*, or as testosterone-fuelled as the likes of *Screamer 2* and *Sega Rally*. *Street Racer* is great at what it does. It's stupendously good fun, and that's all that matters. (MR)



Opting for the isometric 'micro' game mode, the action switches to a tracking overhead viewpoint. Not unlike *Micro Machines*, in fact.



Alternatively, there's always the side-on 'micro' mode, which again drops the real 3D stuff in favour of something more retro.

...THESE TWO HAVE GOT THEIR HANDS FULL



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and very hot.



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PINBALL '97



THE ORIGINS

Before there was pinball as we know it there came games like Pachinko – the Japanese game with hundreds of ball bearings. The balls came down from the top and were caught by U-shaped groups of pins, and points were scored depending on which holes the balls fell into. It wasn't until 1936 that the term Pinball was used and it originated from the Bally Manufacturing Company in the States.

It's hardly the first pinball game to hit the PC, so what makes Pinball '97 different?

Pinball games aren't the most difficult type to convert to the PC because apart from the ball very little else moves. Previous attempts have included Empire's technically accurate *Pro Pinball: The Web* and 21st Century's fun-loving *Slam Tilt*. Both of these were excellent in their own way and managed to incorporate most of the real game's techniques and gameplay.

Pinball '97 does have three tables, which is more than *The Web* had, and the tables are full screen, which is more than *Slam Tilt* managed. However, it does lack the realism of a true pinball sim and quite openly concedes this by giving the game a more cartoon-style look, together with some truly zany sound effects.

Judged on its own merits, and not as a pinball simulator, most people will enjoy playing *Pinball '97*. The combination shots

and techniques required to bring on the really high scores are tantalisingly difficult, leaving that desire to play just one more game. This is no bad thing, as any developer will tell you, and will annoy the pants off anybody else wanting to play.

The three tables are called Mad Scientist, Alien Daze and Captain Hero and each is different enough to be enjoyable for its own sake – they aren't just similar variations on one theme.

The Mad Scientist table, for example, requires you to combine a number of mixtures together which have been collected around the table, the result being a bonus of some kind. Alternatively, you could opt for the brain construction which requires you to collect various squishy components and collect your reward. The other tables work in a similar way. Each table also has a little animation to keep your interest going and to provide a reward if you do particularly well.

Annotations can be provided on screen



You too can be a real superhero and use your metallic balls to save the world, all on the table of Captain Hero.

to help you in your quest for that elusive highest score and the resolutions of the tables can be reduced to help speed things up if you're condemned to using a crumbly old 486.

Apart from this, there really is very little else you can adjust. It's a straightforward game that can be played as and when you feel like it – it's not as if there's any complex, mind-bending strategy, after all. *Pinball '97* can be played just as easily for five minutes as it can for 55 and with up to four players able to compete at once it's the ideal office game for those extended lunch breaks. (JE)

Become part of the alien nation with the table Alien Daze – a subtle play on words, huh?



DEVELOPER
Maxis
PUBLISHER
Maxis
CONTACT
0171 505 1650

PRICE

£19.99

MINIMUM SYSTEM
486DX2/33, 8Mb RAM,
20Mb hard drive, double speed CD drive, keyboard.

A humorous pinball game that substitutes the real game's attributes with its own brand of gameplay.

PC REVIEW VERDICT

7



The Mad Scientist table is a bit of a monster. Lots of bits of a monster, in fact, which it's your job to collect.



SUPER LEAGUE PRO RUGBY

A strange cartoon-style take on Britain's most brutal ballgame.

You have to laugh. There you are, ready to rumble in a rugby simulation that comes with the approval of the Rugby Super League, not to mention Puma and, er, JJB Sports. And then the main pitch screen appears – complete with bald weeble men, comedy running technique and a ball that doesn't have much time for the physics of the real world. Introducing the first game to adopt a humorous approach to the sports simulation.

Sadly for *Super League Pro Rugby*, there's not actually much demand for comical representations of rugby, so those daft player graphics and the smiley face icons don't entice. The way the whole game is played as sluggishly as if the players were wading through mud – which they are in a sense, but

you get the drift – further ruins the effect. And the unfunny and repetitive commentary from two BSkyB sports jocks really doesn't do anything to heighten the tension.

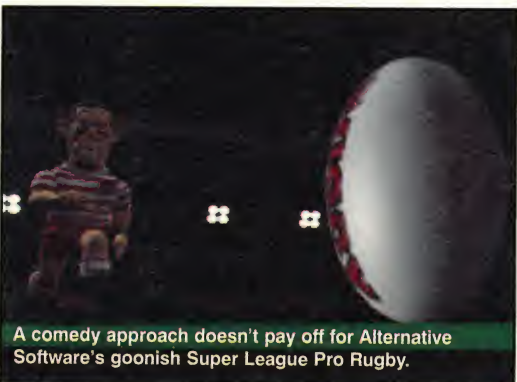
Yet curiously there's been a fairly serious attempt to capture the flow of the sport, if not quite the feel. The control system is simple enough to keep gameplay smooth. And the rules and setups are all implemented properly. With a speedier, more visually realistic approach this might have been a pretty hard act.

But the childish

approach pervades, rendering the game more akin to Mr Benn than the Super League. All in unconvincing slow-motion-out-of-scale-arama to boot. And all for five quid more than most other sports titles. You're better off waiting to see what Codemasters' *Jonah Lumuh Rugby* can do. (MR)



Oddly, the goofy visuals conceal a reasonable level of authenticity and player detail.



Scrums are fun, requiring an old-fashioned Decathlon-style battering of the fire button to win out.

DEVELOPER

Charybdis

PUBLISHER

Alternative Software

CONTACT

0181 569123

PRICE

£44.99

MINIMUM SYSTEM

486/66, 8Mb RAM, speed CD-ROM drive, mouse, Win95, joystick

PC REVIEW VERDICT

Plays better than it looks. But that's not saying much.

5



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series of 250

The Nude Tomb Raider Page

<http://www.nucore.com/~dss97/reviews2.html>

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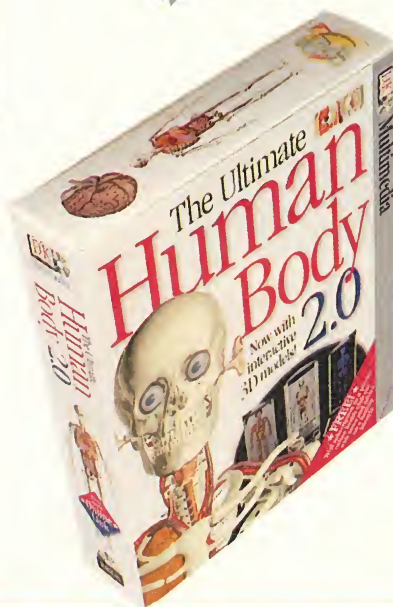
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(0006) Gremlin RRP £44.99



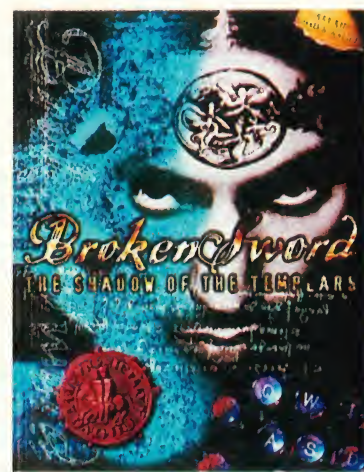
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(0009) Virgin RRP £34.99



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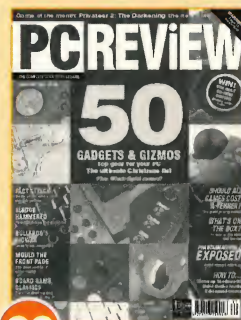
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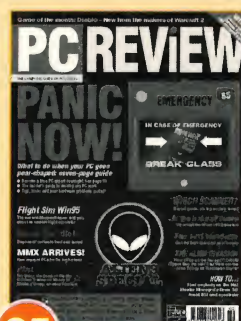
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REISSUES

Here's where benevolent publishers retrieve dusty old games from dark dungeons and send them staggering into the bright light of 1997. This month, a couple of robot fighters and footie sims have been released for good behaviour.

EARTHSIEGE 2

If roaming apocalyptic wastelands in futuristic fighting machines is your thing, *EarthSiege 2* is worth a second glance. It was one of the first games to run smoothly under Windows 95 in SVGA mode, with texture-mapped landscapes and realistic fire and bullet impacts. Even if you've played the original, or the similar *MechWarrior 2*, you'll still enjoy piloting the flying robot which makes it more of a *Terminal Velocity*-style experience. Value is guaranteed by no fewer than 50 missions, which become increasingly hard and need frequent replays.

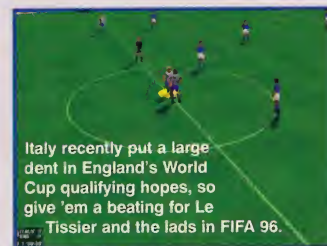


Another example of robotism. You can't go anywhere dressed like an automaton without being set upon by enemy spaceships.

£9.99 ● Sierra Originals ● 0118 920 9100

FIFA 96

On its release, *FIFA 96* promised to deliver the dawn of a new era in 3D sports sims. But while the graphics were considered stunning at the time, and you could view the action from several camera angles, it still played more like a flight simulator than an arcade-style action game like *Sensible Soccer*. It was eclipsed by *Actua Soccer*, and later by the massive-selling, and much-improved *Fifa 97*.



Italy recently put a large dent in England's World Cup qualifying hopes, so give 'em a beating for Le Tissier and the lads in FIFA 96.

£11.99 ● EA Classics ● 01753 549 442

Budget Game of the Month: TERRA NOVA



Moving across *Terra Nova*'s textured landscape I'm attacked by ferries down at the port. Next time I'm travelling through the Channel Tunnel.

Right now there's only one word in 3D games, or rather three letters. But before *MDK* took the heavyweight title with a knockout, the genre was represented by the likes of *Terra Nova*, *Tomb Raider*, and *Quake*. In *Terra Nova*, you can slip into Powered Battle Armour (PBA) and watch your suit negotiate a range of textured scenery, including steep slopes, cliffs, and canyon walls under rainy skies. You even slow down as you wade through water. The aim is to blow up robots with the huge range of weaponry available, which you earn on completing missions. It's still a mystery why it didn't sell more.

£9.99 ● Virgin White Label ● 0171 368 2255

SENSIBLE WORLD OF SOCCER

Sensible World of Soccer looked old even on first release, and little has changed since the Amiga version. The grafted-on management simulation had a serious flaw too and matches are too short to score past the improved goalkeepers. But that overlooks the most important point – you'll never get bored with *Sensible Soccer*. As crossbars are struck and yellow cards awarded, you'll be oohing and aahing like some mad manager. The top-down perspective may not match modern 3D footie sims, but it's still unbeatable for post-pub gaming.

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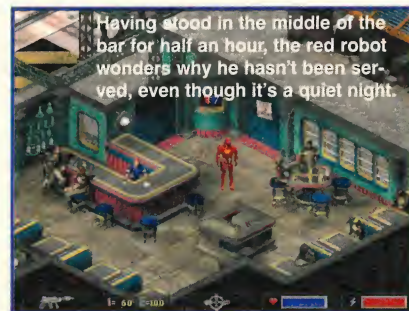


He shoots and... the goalie makes a blinding one-handed save to turn the ball round the post. It could only be *Sensible Soccer*.

CRUSADER: NO REMORSE

Crusader is most memorable for the variety of gruesome methods by which you dispatch minions of the World Economic Consortium, a tyrannical regime which has taken control of the world. The action is combined with a few dull puzzles along the way – like finding key-cards to open doors – but that doesn't detract from the important business of blowing things up and setting baddies on fire. Ultimately, though, *Syndicate* is an altogether more satisfying experience.

£11.99 ● EA Classics ● 01753 549 442



Having stood in the middle of the bar for half an hour, the red robot wonders why he hasn't been served, even though it's a quiet night.

MASTER OF ORION

The rather neat idea behind *Master of Orion* was to take up where your settlers in *Civilization* left off. So you must compete with rival computer-controlled races who attempt to colonise the galaxy with the aid of high-tech weaponry. Unfortunately, *Master of Orion* is let down by its all-important space battle sequences, which are graphically dull and based on a complicated system of digital dice rolls. Fortunately for them and us, MicroProse later delivered a truly classic sequel in the shape of *Civilization 2*.

£4.99 ● Regenerator ● 0161 832 6633



You think ruling the galaxy sounds cool? Even the Empire in *Star Wars* would give up on the idea if they had to play *Master of Orion*.

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OPPONENT WITH THE PHYSICAL CHALLENGE OF
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PLAY TO WIN

Each month a hot new batch of cheat codes and all sorts of other trickery is laid out before you like greasy, spit-roasted pigs at a medieval banquet. We suggest you tuck in before they get cold.

Privateer 2: The Darkening



Unfortunately, there are no cheats for the adventure bits (such as one to make the dialogue better, or to stop people from overacting) but there are a few for the space flight bits, thank the Lord.

First press [Alt] + [N] to get to the Nav screen then press [F].

You can now type in one of these luscious codes. Press [Enter] after each.

NO TALENT: Invincibility

REP ME UP: Repairs weapons and shields

PETY PETY: Refills afterburner fuel

CHILL OUT: Cools laser temperature

NAPALM: Gives unlimited nukes

After landing your ship is reset so you'll have to enter them again during your next flight. Bon voyage!

Your future prospects won't be so black once you have our Darkening codes.



War Wind



Our cheats crack open Warwind, the only game that lets you go to war as a vegetable.

Yet more War Wind codes? Is there no end to this breezy madness? This little lot are for the full, registered version of the game. None of that demo nonsense, you understand.

Press [Enter] then enter these cheats:

!the great pumpkin: Win current campaign

!i am the bishop of battle: Win current mission

!the sun also rises: Removes the 'Fog of war'

!golden boy: Gives 5000 resources

!on a mission from gawd: Workers build faster

!oh come all ye faithful: Workers produce Inns faster

!pump an ahrn: Gives leader full prestige

!show me the way: Displays map co-ordinates

Gene Wars Cheat Codes

Following all the hoo-ha caused by Dolly, the cloned ewe who was a Telegraph cover girl last month, we couldn't resist bringing you a Gene Wars cheat. After all, the game's all about cloning, breeding and splicing DNA molecules willy nilly.

First step, type SALMONAXE during a game to enable these cheats:

W: Win immediately

C: Access all pure-breds and hybrids

L: Summon monoliths

T: Makes buildings translucent

D: Displays memory stats



Beat natural selection with our instant win tips for Bullfrog's diabolical strategy sim Gene Wars.

Apache

Kill things both far more effectively and without any risk to yourself via these cheat codes.

Enter your login name as one of the following to reap the stated effects:

Flandwyn Aiobhell: Play with unlimited ammo

Lyn Wins: Gives unlimited ammo, invulnerability, and enables the cheats below...

[Shift] + [Ctrl] + [Alt] + [Tab]: Speed warp

[Alt] + [V]: Removes fuel (Erk!)

[Shift] + [V]: Tops up fuel (Phew!)

[Alt] + [T]: Over-torque toggle (Huh?)

[Ctrl] + [T]: Terrain-following toggle (Cor!)

Destruction Derby 2

Big cheats for a smashing racing game. Just go to the championship mode and enter your name as one of the following to reap the promised reward:

MACSRPOO: Gives access to all the tracks and all the bowls

CREDITZ!: Shows you a rather snazzy credit sequence as if you had finished division 1

ToNyPaRk: Gives another, similarly impressive end sequence

Scorched Planet

Sweat. Heat. Burns. Blisters. Scorching, searing heat baking the backs of necks and driving grown men mad. Water! Water, damn you! It's hell out there on that *Scorched Planet*. But maybe these cheats will offer some much needed relief? Type these little beauties in during play:

ALIAH: Everyone's favourite – the invulnerability toggle

FATAL: Coming a close second – it's all weapons and ammo

And here's a healthy portion of level warps too:

LAVA2: Mission 1 stage 2

LAVA3: Mission 1 stage 3

GATE1: Mission 2 stage 1

GATE2: Mission 2 stage 2

GATE3: Mission 2 stage 3

CROC1: Mission 3 stage 1

CROC2: Mission 3 stage 2

CROC3: Mission 3 stage 3

HEAT1: Mission 4 stage 1

HEAT2: Mission 4 stage 2

HEAT3: Mission 4 stage 3



Get ahead – as well as a tan – with our scorching *Scorched Planet* tips. But don't forget the Evian.

BLAM! Machinehead

And the best game name award goes to... *BLAM! Machinehead*. As you would expect, *BLAM!* is riddled with huge explosions, multifarious bad guys and mass carnage on a hitherto unseen scale. However, it's also rather tough, so these level codes will prove invaluable.

1.2 Q58NM LDZCQ 4HWGE

1.3 TDM75 UH8OT X06BE

1.4 VO1PP JCP6V H4ULJ

2.1 0F20F 0HX8Y OE95W

2.2 42W3T JGK-P 5K5H7

2.3 VR4T2 6EZD5 SHCMM

2.4 1NBCX CXV16 PA3K1

2.5 ZF0XD Y5KXJ Q2NGZ

3.1 2XVSD AHO3J S2MF-

3.2 W0J8H 3Y8-D -7FRU

3.3 THYDH 0MZDU 3CZFK

3.4 1SOJ3 130BP V2MW8

4.1 YCTS6 PUUKS 28SD1

4.2 Q29LH UDUY4 21FSD

4.3 WS7Y6 HQPIW BOFGK

4.4 2RHK4 RB9RU Z1IT2

END UP405 C42R1 2MP3P



It takes much more than a big red chopper and a robotic head to get by in *Blam! Machinehead*. Our level codes, for instance, will prove useful.

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"If Microsoft had developed C&C, Red Alert would be Command & Conquer 97. And that's not good enough. Revolution is the cause, not evolution. We don't want Bat out of Hell 2, we want a Sergeant Pepper or an Achtung Baby. We demand that C&C 3 astounds us." — PCR63, Christmas 1996.

C&C: RED ALERT

Time to complete the Allied missions, then switch sides and crush those capitalist-imperialist pigs...

PART TWO

ALLIED MISSION 12

Deploy your two MCVs, build a base and two refineries. Drive a light tank to the east and north, where you'll find mammoth tanks. Mine their resting locations, then get a tech centre to find the enemy ore truck. Build six helipads in order to destroy it, and use rocket infantry against aircraft. Use medium tanks to attack the base, and infiltrate the sub pen with a spy. Capture the construction yard and weapons factory. Send helicopters over the river to destroy the enemy ore trucks. Make some V2s to take out the Tesla coils, break a hole in the concrete wall on the base's coastal side, and send tanks to the northern section of your land mass to destroy the power stations. Construct a naval yard and a transport. If submarines attack, destroy them with V2s and helicopters. Land V2 rocket launchers on the Tesla coil island and destroy the SAM sites. Fire the sonar pulse. The V2 rocket launcher should take out some submarines — obliterate the others with helicopters, using your transport as a decoy.

ALLIED MISSION 13

Deploy the MCV immediately and build a camouflaged pillbox to the northeast of your base. Scout east with the jeep, and turn around at the mammoth tank. Scout to the east and north shooting any dogs you find, but retreat if you see



In the Soviet military command HQ, top brass discuss whether or not to replace their cheap pine furniture.

the enemy. When the mammoth approaches your base, shoot the civilian before he drops a signal flare. Drive your ore trucks in circles until the mammoth's invulnerability wears off, then destroy it with medium and light tanks. Expand your base, placing camouflaged pillboxes in the corners. Send the spy north, then east past the Tesla coil into the enemy base, follow the coastline and infiltrate the sub pen. With the GPS satellite up, you'll see two bases. The ore truck from the base on the right uses a northern ore field. Send six Longbow helicopters to destroy it. Mine the roads through the village to eliminate mammoth tanks, send helicopters near to the west edge to avoid SAM fire, then attack ore trucks.

Snipe targets with helicopters, then send tanks and engineers in APCs.

ALLIED MISSION 14

The top units are Group A, the bottom Group B. Move Group A engineers to the control panel to destroy a flame turret and send Group B east, killing everyone and destroying the northern turret using the control panel. Move Group A east past the tanks, grouping riflemen in fives to defeat infantry. Use the medic to heal soldiers while they fight, letting the enemy come to you. Head north through the passageway to the first generator, then out and east to disable another turret control panel. Advance south with Group B and rush the grenadier at the generator controls

with rifle infantry. Use an engineer to set a charge on the generator, then move Group B east and do the same again. Continue east to a large room — use an engineer to take out the centre and northwest control panels. Move Group B to Group A and assemble five rifle artillery, two doctors, and an engineer. Move this team east to another generator, then south and west to the centre. Go south and activate the turret control with an engineer (it's a small computer in the west wall). Head west from the V2 room, shoot the barrels and disable turrets at the two control panels. Disable remaining generators in the central hub, take the lower right passage and move all units inside, along with a spy. The enemy will run away. Now move engineers east to reprogram the last generator computer.



The Ruskies love shooting barrels because they tend to take everything with them when they blow.



To qualify as a Russian general you need a stern-looking chin, a silly coat, and arms tied behind your back.

ALLIED MISSION 15

Move Tanya and the thieves down, then up and away from explosions. Shoot infantry as you move west. Move north into the base when you hit the coastline. Destroy small power stations and shoot the delivery van with Tanya's pistol until it explodes, leaving a crate of money. If it flees, go south and cut it off at the river crossing. Go up to destroy the power plants, then move thieves into



Explosions on the river crossing halt the Soviet's expansion plans. Fortunately there's loads of water to put the fires out.

the ore silos to take the money. Move the MCV to the signal flare and defeat mammoth tanks by mining their paths. Deploy rocket infantry and AA guns around your power stations. When the GPS is launched, destroy the ore truck from the air by building six helicopter pads. Construct a naval yard and build a cruiser. Extend the base to the water by building a chain of barracks up to the coast. Put anti-air defences by the naval yard, use the chronosphere to move the cruiser to the lake by the southern edge, and pound buildings until the enemy sells up. If the guns miss, attack a game square slightly above the targeted building. Then chronoshift the cruiser into the bottom lake and hit airstrips and power stations to the north. Send helicopters to destroy SAMs, then power stations, and mop up with tanks.

SOVIET MISSION 1

Use aeroplanes to shoot barrels. Under the church to the west you'll find a healing crate. Go north and shoot more barrels. Move soldiers to the unexploded bridge. Blow up the barrels, kill all civilians (you're Russian after all) and destroy their buildings.

SOVIET MISSION 2

Shoot barrels by the bridge. Build a power plant, refinery, barracks and aircraft. Scout north with a soldier, who will be attacked by a jeep and rocket infantryman – you can attack both with aircraft. Split rifle infantry into two groups of equal size. Move south past the river crossing, and pass ore deposits to the west. Keep the groups close and move slowly until you start fighting. Attack enemy rifle infantry first, jeeps second, and rocket infantry third among the enemy forces. Destroy their ore truck and turrets with concentrated rifle infantry fire. Use the Yak plane to attack power plants, construction yards, and other lightly-armoured buildings.

SOVIET MISSION 3

Split your dogs into two packs and move south to the pillbox. Go east to the house with guards inside. Set the dogs on them to rescue the soldiers,

then move a grenadier south into a wide valley and throw a grenade at barrels to destroy the pillbox. Move men in front of your dogs and kill infantry. Then go south across the river and west to the village, where a dog will cause havoc. A spy escapes in a transport, but a plane-load of reinforcements arrive. Move north through the mountain pass and shoot barrels with a rifleman. Send everyone towards the safe house. Now group grenadiers and inch them slowly west, letting them throw grenades at unseen soldiers until your enemies are killed. Stay away from barrels near the river. Shoot them when enemy rocket infantry have missed, and set dogs on the spy.

SOVIET MISSION 4

Move west to the village. Deploy the MCV along the road stretching to the bottom corner and build a base. First construct a power plant, then a



The Allies don't know what's hit 'em - even Arnie would be impressed by this huge explosion.

barracks and a refinery. As you gather ore, there's more space to build. Put dogs near your perimeter as border guards. Build an airstrip and send a spy plane to the top of the screen, vertically in line with the first river crossing. Drop paratroopers next to the radar dome and destroy it. Build as many heavy tanks as possible, send your armour north from the gap generator and destroy the oil truck, refinery and weapons factory. Attack tanks and jeeps, but beware of turret fire. Build still more armour to finish off the enemy.

SOVIET MISSION 5

Put your base south of the road and build a radar dome. Scout north with a rifle infantryman, attempting to lure the



Three Yak planes are perfect for making daring runs over enemy territory. You can't help whistling the theme from Dambusters.

enemy down to you. Build some tanks and send them to destroy the enemy ore truck in the north. Go back to base where infantry can help destroy the rescue force. Take out enemy turrets by constructing three V2 launchers. Keep infantry close and follow them with tanks. Capture the Allied construction yard and radar zone, but ignore the refinery and barrels. Build six airstrips and Yaks. Find the enemy refinery on the middle island using the spy plane, then strafe it with Yaks. Attack the island's units from the air, or build a naval yard and use gunboats to bombard them from the coast, hitting enemy destroyers with submarines. You must kill all enemy soldiers on the island.

SOVIET MISSION 6

Retreat west and set your base at the far edge. Counter attack with rifle infantry and six heavy tanks. Send an

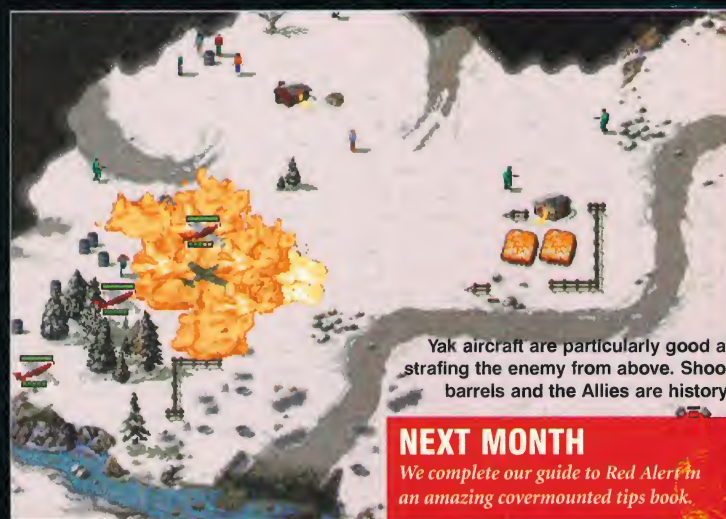


A Russian base in full swing. Those ore fields to the north look ripe for mining.

APC into the northern base to find the refinery. Destroy it by strafing it twice from the air. Remove enemy fortifications with three V2 launchers, using tanks and infantry to deal with other enemy units. Capture the weapons factory and build another repair bay nearby to fix tanks before battling east. When you reach the main island, concentrate on destroying the tanks, then move convoy trucks on to the island through the path you've managed to clear.

SOVIET MISSION 7

Flee, moving your men down the east passageway and shooting barrels at the end. Pass a guarded control room to the west and head south to the pillbox where you can light the barrels and free the dogs. Split them into four groups and kill the control room guards. Move a soldier on to the control panel plates to destroy the flame turrets. Go west, stopping short of barrels to avoid attack by rocket infantry, who you can kill with dogs. Move through the corridor, shooting barrels until you come to a large area with many barrels. Kill the enemy soldier, move to the engineers and kill their guard. Place an engineer at each computer terminal, then move your last engineer to the core computer terminal to complete the mission. (GS)



Yak aircraft are particularly good at strafing the enemy from above. Shoot barrels and the Allies are history.

NEXT MONTH

We complete our guide to Red Alert in an amazing covermounted tips book.

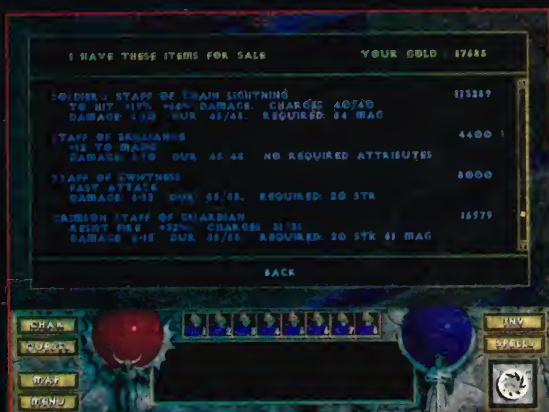


"By marrying the classic character progression elements of regular role-playing games with ultra-smooth point-and-click action, *Diablo* manages to offer the perfect blend of accessibility and depth. Proof, were it needed, that the devil gets all the best games." — PCR65, February 1997.

SURVIVING DIABLO

Welcome, O bearded one, to Episode 2 of our character building crash course. Yes it hurts, yes it works.

Part Two



Well, so long as you have a thing about staffs, it looks like your luck's in here.

1 SHOP! HORROR!

So you've managed to climb the first few rungs of the level ladder and you can face a skeleton without going to pieces, but there is no need to rush. *Diablo* will wait. It's best to ensure that you're in peak condition when things turn nasty. Thus you might as well loiter a while on the upper levels, hoovering up gold and EP. The good times can't last for ever though, and this strategy becomes less and less effective as the EP curve steepens.

Make regular trips to your local village fence (geezer who deals in dodgy gear) to offload surplus gear and spend your cash on the very best armour and weapons gold coins can buy. Don't wander into the dungeon with a bulging wallet. If you're mugged you'll lose half your cash, all your equipment and, unfortunately, recovery rates are poor. Deposit your stuff in a safe place. In a single player game you can build cairns of valuables around the village and, as in some utopian paradise, no one will pinch it. The multi-player game, however, suffers from an excess of 90s sensibilities so guard your tackle with your life.

Magic items are a particularly good source of income. Grab them all, but make sure you identify them before you sell. As in the Antiques Roadshow, identified items are worth more than anonymous bric-a-brac. Sell miscellaneous items to the witch and arms to

the smithy, but don't bother repairing them — he can't tell the difference.

2 SPELLING IT OUT

This advice applies across the board although Sorcerers, being amnesiac geriatrics trussed up in pointy hats and impractical robes, should pay particular attention. They have a hard time at the beginning of *Diablo* with their poor brawling ability and initially limited spell repertoire. Once they've mastered a few enchantments though, their destructive potential is unmatched.

3 BOOKWORMS

For Sorcerers books are everything. Spell levels are raised by reading more books: if you read six Fire Bolt books, you'll be frying beasts with level six Fire Bolts. This is handy because at level six you are clued up enough to cast Fire Bolts for free.

Some ghoulies eat fire for breakfast however, so an alternative trick like Lightning Bolt is desirable. Lightning Bolt stops costing mana by level 10, but, unfortunately, books on the subject are rare.



Keep an eye on your characters stats — and don't be afraid to leave the dungeons to bring yourself back to full health.

A strategically placed Flame Wall is a Sorcerer's surest way to deal with coach parties of low level monsters, while Flash will slaughter the Butcher with one shot. A general purpose incantation like Flash is vital in the deeper levels as you tend to be attacked by complementary teams of monsters, some of which are immune to fire while their mates are resistant to lightning.

Never neglect your physical weaponry as you'll inevitably meet some cunning devil who responds to pyrotechnics like you've pulled a rabbit out of a hat. This type of beastie only understands a mace in the face.

Party time

In public multi-player games, it's amusing to note how quickly the fantasy world of *Diablo* has come to ape the real world it's trying to escape from. On the mean passageways, unscrupulous villains use level editors to create super characters and the money cheat has rendered cash worthless between players. Barter for portable property only. And, of course, beware of strangers. There are plenty of thieves and player killers about. They may help you for a while, quietly observing your strength, then they'll stab you in the back, snatch your gear and run,

especially if you don't eat your greens. Be cautious — don't drop items just because somebody asks for a look.

Class relations

Group *Diablo* requires the development of new strategies and co-operation between the classes. Warriors should give players with ranged attacks a chance to clear their fields of fire before charging into rooms. Conversely, the biggest menace a Warrior often has to face is a Rogue with a good bow. Don't try to pick off creatures surrounding your melee partner. Your stray arrows will make a pin cushion out of him. Sorcerers should give warning of the imminent launch of spells of mass destruction like chain lightning and flame wave. Try to position yourselves a short distance apart (about four squares) when strafing an area, setting up parallel fire corridors. Warriors can then avoid friendly fire by using the [Shift] key, mid-brawl, to stop themselves walking into the lines of attack.

Door Policy

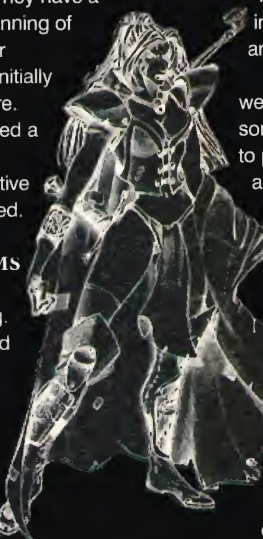
Handling doors is a complicated issue and you should work on a strategy with your colleagues. Try using whoever opens the door to scorch the next room before entering. When all's quiet, step into the door frame and then straight back out — this'll draw out a few nasties. Kill them all, then step one square through the door and out again. Once the third wave is dead, the entire party can move in to the room to make it safe.

Back up

Make sure you've got some scrolls of resurrection handy and that everyone's prepared to use them. Sign legally binding contracts if necessary. Keep back-up equipment in a safe place like the cow field. Then, you won't have to return to the dungeon naked after an untimely demise. Create one player multi-player games to build weaker characters up to the party standard.

Portaling about

Portals are crucial for fast transit, and enable regular trips from the depths to





All I said was you had nice wings. There was no need to impale me for it!

shed surplus goods and restock on potions. Two characters who can cast the Town Portal spell can create permanent portals. Cast the portals whenever you hit a new level, then, when in the town, use the portal the other person made. A Portal will only disappear if its creator enters it through town, creates another or leaves the game. For safety reasons keep your portal away from the stairs. It'll provide an alternative escape route and won't cause monsters to congregate at your exits. Set up your portal spell as a hot key. Then, if you're in trouble, run pell mell, right click and jump in.

Shopping around

We're all well aware that if we walk into Harvey Nicols wearing plastic sandals and a coal sack, we're unlikely to receive the same premium service as the Armani suit with manicured finger nails. So it is in *Diablo*. Items are offered according to a level based seeding system, so there is no way a paltry Level four is going to see the items offered to a swanky Level 35. Always have the most trustworthy, high level, character do your shopping, therefore.

If you're tired of the smithy's paltry offers for your goods then head to Battle.Net chat. You'll find plenty of low level types, eager to snap up your cast-offs at a much more agreeable price.

4 NET GAIN

A veritable shanty town of support services and Citizens' Advice Bureaus regarding *Diablo* has sprung up on the Net. Check Yahoo's *Diablo* page at www.yahoo.com for the best links.

Step further into the *Diablo* reality bubble by bargain-hunting at www.geocities.com/siliconvalley/7485/market.html. Home of The Realm of *Diablo*'s Black Market, this is where all kinds of items can be traded via email.

At www.oz.net/~torgy/torgy.htm you'll find *Diablo*'s Most Wanted. From here outraged *Diablo* citizens can put out contracts on outlaw players who've

crossed them. It's mob justice where the wronged demand their nemesis's 'ear' as proof of the kill. Meanwhile bounty hunters can check out the rewards offered and arrange private meetings with their clients.

5 IF YOU CAN'T BEAT 'EM, CHEAT 'EM

You're up against the Horn-ed One. A little diabolical behaviour is appropriate.

Big fish in a little pond

If you're Level 20 or so and taking a kicking on Normal/Hell mode, then try Nightmare Church. You'll be able to clear the first four levels while quickly racking up EPs and gold.

Random element

Most elements in *Diablo* are random. If you don't like your world then change it. For example, if level 5 is a bit tricky then start a new game. It may become a lot easier. The same goes for the shops: start a new game to change the management if you're unsatisfied.

Spell cramming

Find the required spell book. Then leave and rejoin the game, the book will still be there. Read it, leave, then return and so on until you've reached the desired level. This only works in dynamic multiplayer games and one person must always stay in the game.

Spell overload

Many cast spells like Chain Lightning one at a time until mana is exhausted. To wring the most out hot situations, keep right clicking as fast as you can and you'll be able to cast more spells than you're paying for.

Money, money

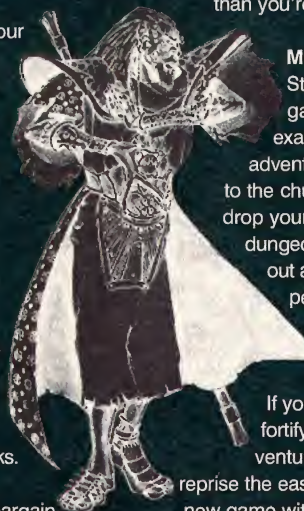
Start a multiplayer game. There must be exactly three adventurers present. Go to the church entrance and drop your dosh. Enter the dungeon and then come out again. If the ritual is performed correctly you'll be quids in.

Body building

If your character needs fortifying before venturing deeper, then reprise the easy levels. Start a new game with the same character, and complete levels one to four again. This is a particularly fiendish cheat for raising spell levels as you repeatedly find spell books.

NEXT MONTH

we'll delve into the arcane mysteries of trading, spell strategies, multi-playing and even, gasp... cheating.



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MULTIMEDIA



Who am I, why am I here, and what's life all about? These are questions we ponder all the time here at PC REVIEW, before coming over all giddy and giving up to play Quake. This month, however, we satisfy our philosophical curiosity with *Sophie's World*, an interactive version of the best-selling novel. The review is on page 79.

The questions in *Pathé News*, though, are based on the hard, historical facts portrayed in old cinema newsreels. Find out more about this unique British institution on page 82.

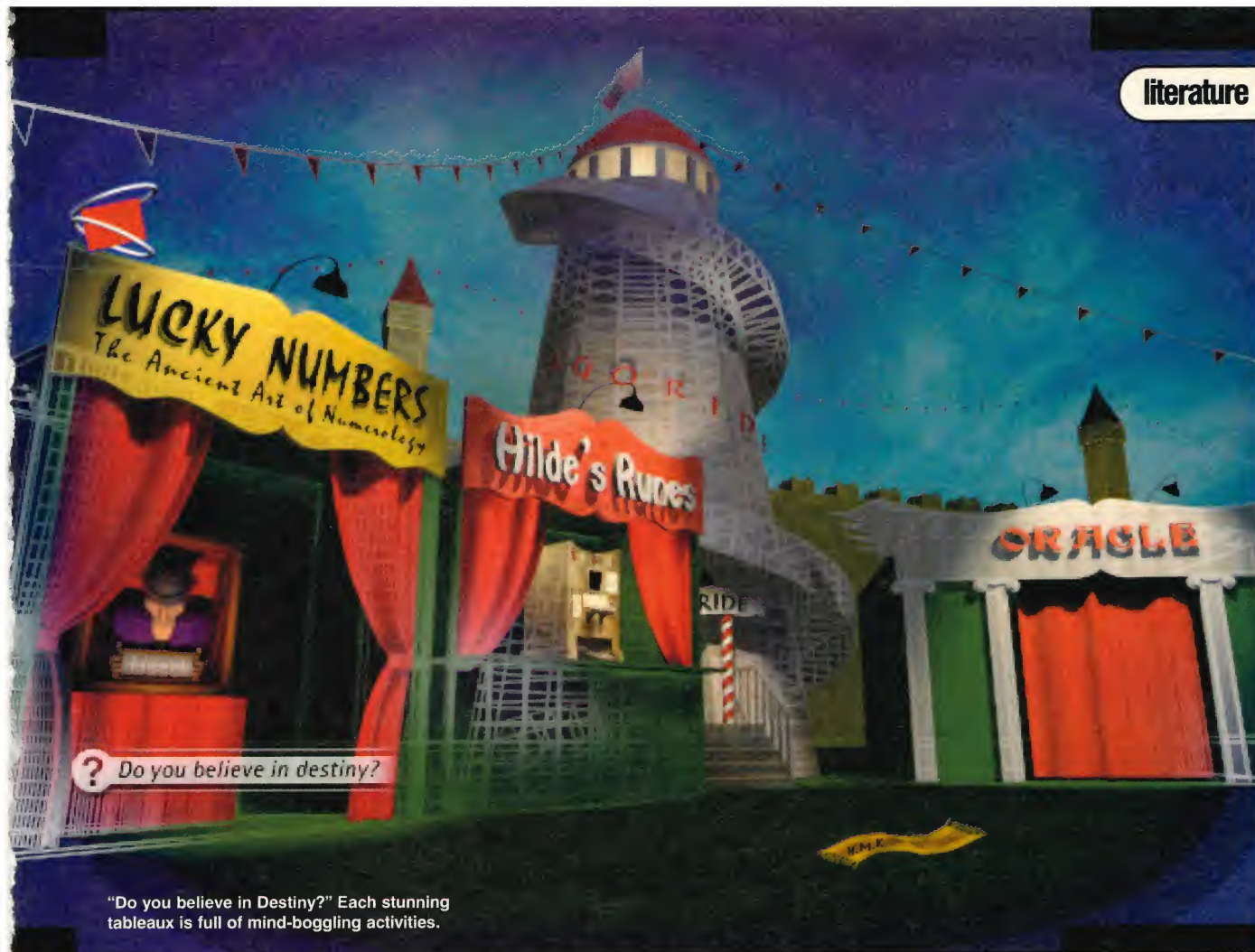
The *Genius of Edison* is another CD-ROM aiming to bring history to life. It tells how the man invented the light bulb, phonograph and other necessities of modern life.

One of this century's greatest inventions was the space rocket. But could man ever live on Mars? Find out on page 80. Finally, with summer on its way, read page 83 to see how top coach David Leadbetter can improve your golfing technique.

Graham Southorn
Staff Writer
gsouthorn@
futurenet.co.uk

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"Do you believe in Destiny?" Each stunning tableaux is full of mind-boggling activities.

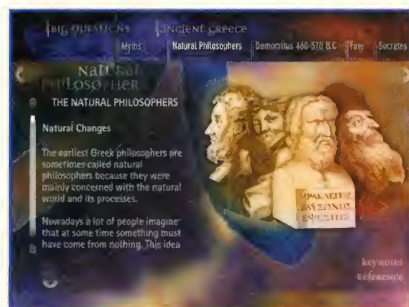
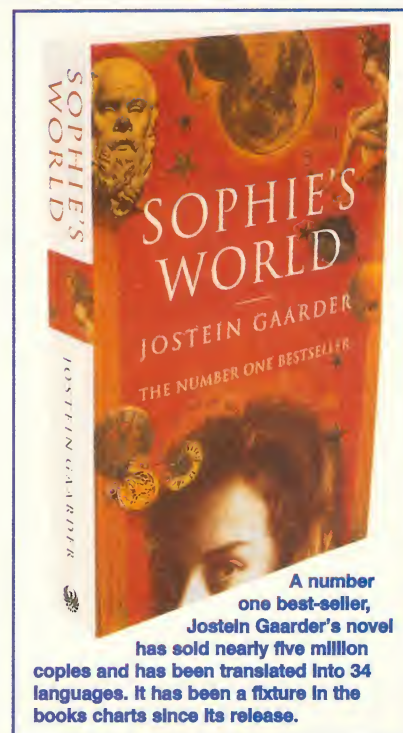
SOPHIE'S WORLD

Brush the dust off your thinking cap, as you'll need it to cogitate life's great imponderables with this adaptation of the celebrated best-seller.

Is she really going out with him? Do you remember the first time? Why do fools fall in love? Are friends electric? And, whose round is it anyway? As a long-forgotten, popular beat combo once espoused there are

more questions than answers, and how right they were. For a start, despite all the different lines of interrogation, lots of answers are simply 'yes' or 'no', then there's the extra category of questions to which no answer is required. When was the last time you heard a rhetorical answer? Exactly. There are more questions than answers.

Also fighting in the questions corner is the ostensibly academic discipline of philosophy, where the fundamental nature of man's ordinary and scientific beliefs are investigated by means of rational argument. You may think a philosopher should be holding all the answers but far from it. Paying no heed to trivial matters, this is an art that concerns itself with the bigger issues of ethics, semantics, epistemology (the resources and limits of knowledge) and metaphysics to which any



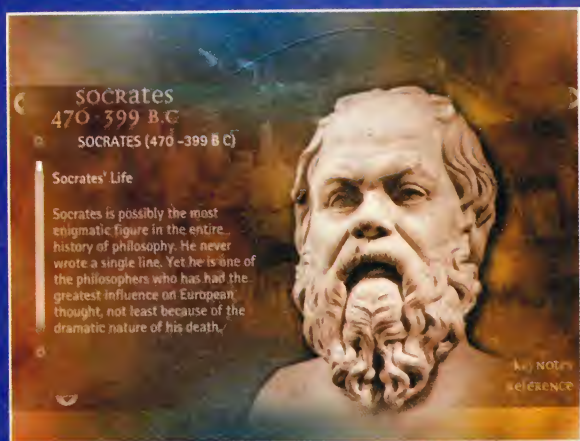
Even before the days of quantum mechanics, Democritus was proposing 'atomic theory'.

solution is abstract at best. Grandfather of them all, Socrates believed a true philosopher in reality knew very little and should constantly strive to ask more questions.

Norwegian schoolgirls

Based on one of the biggest publishing successes of the past few years, *Sophie's World* the CD-ROM derives its inspiration from Jostein Gaarder's bestselling novel of the same name. The book is an audacious and

What's your poison?



Socrates (430-399 BC) is probably the most enigmatic figure in the entire history of philosophy, not least for the nature of his death. Amazingly his beliefs are only known through the writings of his pupils Plato and Xenophon, and yet he is one of the philosophers who has had the greatest influence on European thought.

Plato believed that no-one could possibly be happy if they acted against their better judgment. And he who knows how to achieve happiness will do so. Therefore, he who knows what is right will do right. Because why would anybody choose to be unhappy? Fair point.

In 399 BC he was indicted for introducing new gods and corrupting the youth and was condemned to death. He refused to flee Athens – valuing his conscience and the truth more than his life – and died by drinking hemlock.



lively philosophical tour which, from the pre-Socratics to Sartre, somehow manages to condense the entire history of Western philosophy into a measly 400 pages.

The narrative involves the eponymous Sophie, a 15-year-old Norwegian schoolgirl, and her purely non-physical relationship with a mysterious philosopher answering to the name of Alberto Knox. In a series of fascinating letters, he opens Sophie's inquisitive mind to the fundamental questions that have taunted man for the past 3,000 years.

With its mixture of straightforward prose, philosophical debate and historical fact, the novel is an unusually-structured work and a direct interpretation from book to disc would have been not only difficult to achieve but would have wasted an opportunity to create an original and valid work of multimedia. To its eternal credit the disc's developer, The Multimedia Corporation, has cleverly taken a different approach to Jostein Gaarder's



The excellent Philosophy Band not only covers individual thinkers but features eight different historical epochs.



"What is the earth made of?" The elusive Alberto persistently peppers you with questions throughout your journey.



Here we get a glimpse of young Sophie and Alberto. She starts to talk revolution but is finally pacified by reason.

original idea, and instead of presenting you with an undemanding literary narrative places you in a dynamic electronic universe.

Upon entering *Sophie's World* you are designated the role of 'tester' and let loose on DY AUS, a virtual reality program which has been designed to stimulate philosophical thought through the use of artificial intelligence, namely young Sophie and clever-clogs Alberto. The latter is your guide throughout the duration of your stay and in the truest Socratic tradition, he will challenge you with questions and puzzles at every turn. Your journey is ordered chronologically and so you are able to follow man's fears, doubts and preoccupations through history.

Greece is the word

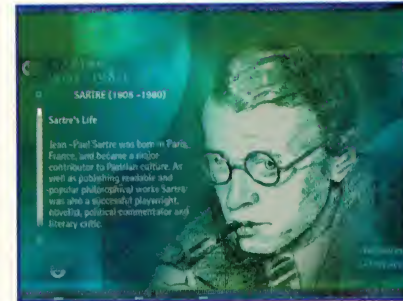
The earliest entry is devoted to the Greek philosophers, a school sometimes known as the Natural Philosophers because they were primarily concerned with the natural world and its processes. The question asked here is, "What is the world made of?" In an age



The roots of the Yggdrasil tree reach to the very centre of the world and its branches brush the sky.



After you have entered your date of birth the mysterious figure of Zoltar will furnish you with your life number.



There is some 20th century representation but it is not covered in nearly as much detail. Here Sartre does his best to look cool.

long, long before quantum mechanics revealed to us the behaviour of elementary particles and mighty atoms, the Natural Philosophers were looking for an understanding of the fundamental laws of nature. In fact, they believed all nature was formed

from basic elements such as earth, air, water and fire. Revered in their own time as the greatest thinkers on the block, these ancient Athenians would nowadays struggle for a pass mark at GCSE Biology, however, they still proudly stand first in a long line of philosophers.

Within each scene you can 'talk' to Alberto who'll pose questions and keep you on track. Sophie, who is also exploring this philosophy adventure – or is she? – also appears from time to time. You can converse with both of them through a dialogue box, this interactivity goes some way towards what the developers will hope adds a greater sense of involvement with the characters. Fulfilling the dual purpose of guiding you through the disc in as entertaining a way as possible,



Through its use of dreamlike imagery, each one of the 20 environments on the disc represents a philosophical conundrum.



Aristotle demonstrates his theory of the co-relation between shape and form using an evidently unwilling chicken.



In the Romantic Wood Hansel and Gretel are at loggerheads debating the relative merits of Hegelian philosophy.



The Philosophy Band is an excellent reference tool, including a series of narrated slideshows on a variety of sub-topics.

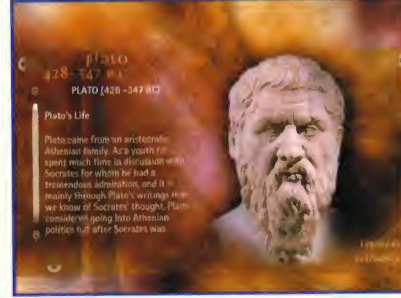
and setting you up for the confounding philosophical conundrum that you'll encounter later on in the adventure.

Obviously this 'conversation' is limited but every now and again you'll find yourself involved in a debate genuinely taking care over your reply, as if looking for some kind of intellectual approval. For instance, at one stage you are asked by Alberto whether you would prefer to live your life as a responsible citizen, hedonist or thinker. He may only be a pompous virtual philosopher trapped in an electronic universe, but you don't want the old boy to think poorly of you now, do you?

Every environment contains a gateway that takes you to the next scene. However, to progress, you must somehow convince Alberto that you have taken something from the previous scene with you. This proof may simply be in the context of a correct dialogue response or in the not so straightforward shape of a perplexing puzzle, which needs to be solved.

What does it all mean?

If one of Alberto's many conundrums has your head in a tailspin and you find yourself unable to progress, you may be able to find the necessary prompting from the disc's



Plato was a student of Greek philosopher Socrates and should not be confused by a cartoon Disney canine.

so-named Philosophy Band. It is a time-line which contains in-depth insight into the life and work of 28 noted philosophers covering eight historical epochs. Revealed at the top of the screen it can be used in tandem with the scenes below or separately as a source of reference.

As with every aspect of *Sophie's World* it is a classy affair and could stand alone as a pure reference guide and still not look out of place against the competition.

Ambition in the multimedia world is a rare thing and should be applauded, particularly when it produces such an imaginative and intelligent title such as *Sophie's World*. The execution of this disc is near flawless and it clearly shows up the lack of thought and commitment to quality shown in the majority of other multimedia titles. With such a broad scope, though, it was inevitable that some thinkers would get shorter shrift than others and, the celebrated minds of the 20th century don't get the same coverage as the ancient Greeks. However, this is one small minus amongst a host of pluses.

Sophie's World doesn't possess all the answers to those fundamental questions that man has been asking since the dawn of civilisation and it certainly won't make you a

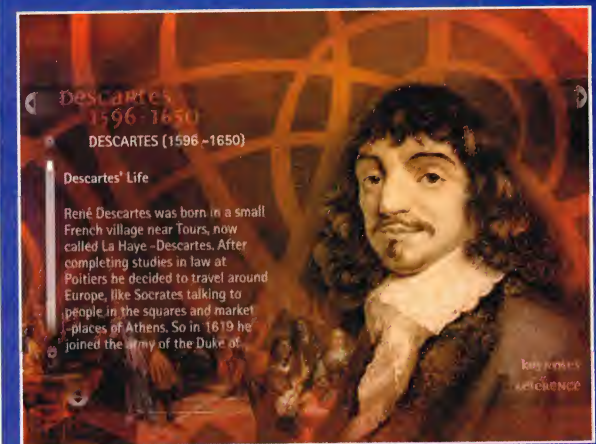


The virtual Socrates and his attentive student are seen here debating the nature of virtue. It's all very civilised.



The Pentalpha game went down a storm in Ancient Greece but it loses an awful lot in translation. Not a patch on Tetris.

Drunken Fart



According to the charming Monty Python ditty, René Descartes was considered to be a drunken fart, however, this is grossly unfair and no way to talk about the man many consider to be the founder of modern philosophy. Or is it?

Just like Socrates he was prone to visions. Similarly, he believed that reason was the only path to knowledge and took this principle to its furthest extremes. Descartes thought, for example, it was quite possible that our whole life could be actually no more than a dream, and that very little is beyond doubt. He doubted everything and this was the one thing he was certain of. In fact, this is when his great revelation dawned upon him. When he doubted, he had to be thinking, and this was the positive proof he needed to prove he actually existed. As he so succinctly put it, "Cogito, ergo sum." I think, therefore I am. (As opposed to the Python version, "I'm pink, therefore I'm Spam.")

Question Time

Sophie's World asks all the really big philosophical questions that man has been asking since the beginning of time. The Big Nine are as follows:

- 1 What is the world made of?
- 2 Can our senses tell us what the world is really like?
- 3 Do we have free will?
- 4 Is there a right way to live?
- 5 Does God exist?
- 6 What is time?
- 7 What is space?
- 8 What am I?
- 9 How should we live together?

Answers on a postcard to the usual address.

better or wiser person. However, this excellent disc will restore your faith in the potential of multimedia and, what's more, it's guaranteed to keep that soft convoluted mass of nervous tissue within your skull ticking over for many a long hour. (GT)



The Renaissance section begs the question, "Are there laws for all our movements?" And do they apply both drunk or sober?

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THE DREAM OF MARS

In the 19th century, astronomers believed Martians had built canals to irrigate their barren planet. They were wrong, but current terraforming theory suggests it might yet happen...

ROVING ROBOTS

NASA's robotic *Sojourner* may be set to land on Mars this July to collect rock samples, but robots are considerably more advanced in the movies. In *Forbidden Planet* Robbie could reproduce objects and food; Huey and Dewey continuously maintained the spacecraft in 1972's *Silent Running*; and *R2D2* and *C3PO* routinely saved the day in *Star Wars*.

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Emme Interactive/
Nexus

PUBLISHER

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A well-presented and comprehensive source of scientific and historical background.

PC REVIEW VERDICT

7

From Percy Greg's 1880 space travel novel *Across the Zodiac* to last summer's blockbuster *Independence Day*, Mars has been a continual source of inspiration for writers, artists, and film makers.

And throughout the same period, it's also proved an enigma for scientists. In 1864, English astronomer William R Dawes observed dark lines criss-crossing the surface and mistook them for canals. Even today, the arguments over life on Mars rage on. Last year, NASA claimed to have discovered evidence of life in a Martian meteorite, but other scientists rejected the claim by dismissing the so-called microfossils as a naturally occurring phenomenon.

The mystery of life on Mars is enough to fill several large books or, indeed, a CD-ROM. And that's exactly what Emme Interactive has attempted with *The Dream of Mars*. First and foremost, it's a reference work combining information on scientific missions to the Red Planet with its presentation in books and films.

To navigate the disc, you move a mini robot around a Mars colony in the year 2026.



Outside the dome, the Martian atmosphere cannot support human life. But the disc contains a rendered sequence where it's terraformed before your eyes.

By visiting each room, you can plug into various computers to access different information. For example, one computer stores details of the various space missions. The Soviets were first with their Mars 1 probe in 1962, and the latest is NASA's Global Surveyor, which will make its first landing in 1998. The disc also includes sections on robots, astronomical observations, and a comparison of Mars with Earth. Although they're readable enough to be entertaining, these scientific sections don't stint on technical detail. And at various points you can summon up an expert opinion from NASA geologist Phillipe Masson, who appears in video clips.

Aside from text and pictures, *The Dream of Mars* has a unique method of imparting

scientific background. The upper screen flashes periodically, announcing a news bulletin from Mars' answer to Trevor McDonald. He reports on the 50th anniversary of the Viking landings, or that a huge dust storm is about to blast the surface and solicits the opinions of a suitably eccentric-looking boffin. Unfortunately, they both appear to have been dubbed by the same actor, which rather spoils the effect.

And *The Dream of Mars* has a real dearth of material on fictional treatments of Mars – particularly video clips.

Nevertheless, the scientific data provided on this CD will be invaluable for the budding colonist. But since a Martian colony would cost at least \$400 billion to establish, it's unlikely that there's going to be a base there tomorrow. (GS)

You can summon up an expert opinion from NASA geologist Phillipe Masson.



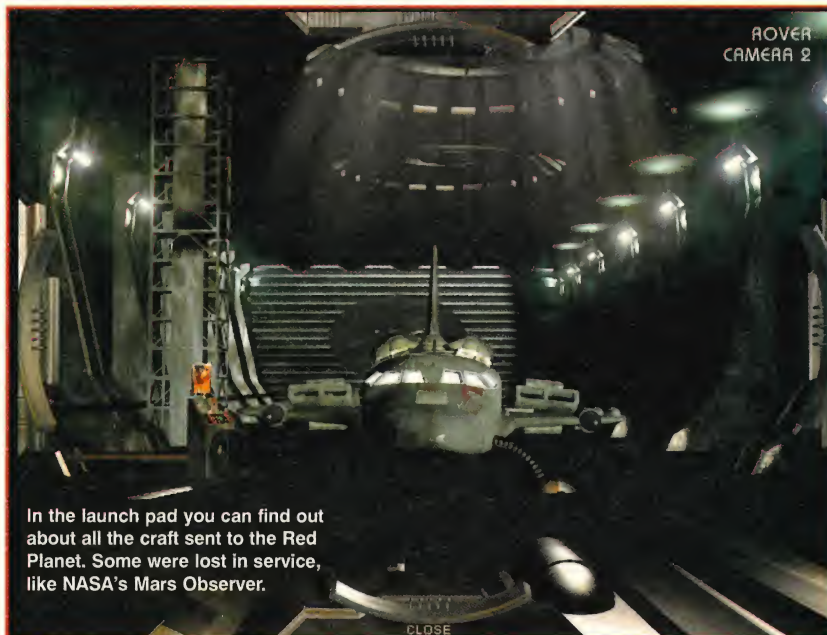
The treatment of Mars in books and movies ranges from classics like HG Wells' *War of the Worlds* to 1950s Hollywood B-movies.



One way of living on Mars is to set up a base inside a self-contained dome, much like the American Biosphere project on Earth.



Viking Lander took photos of the surface and analysed rock samples, but even more is planned in 1998 with Mars Global Surveyor.



In the launch pad you can find out about all the craft sent to the Red Planet. Some were lost in service, like NASA's Mars Observer.

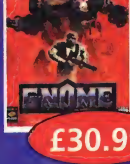
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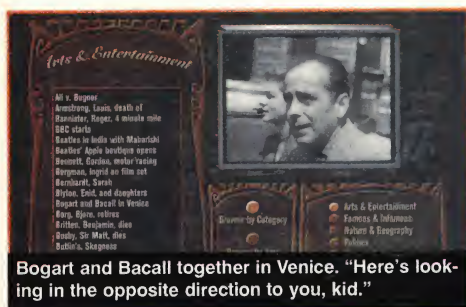
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X Com Terror From The Deep	12.99	Matrix 4MB PC Video Card	199.99
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(X Wing enhanced, B Wing & Imperial Battle)		Megapad Xi631M	14.99
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PATHE NEWS

20TH CENTURY

CHALLENGE



Remember the days when Britain had an Empire and people watched news broadcasts in cinemas? The Pathé quiz brings it all back...

HOW NEWSREELS WERE MADE

At the location, several cameras were used to film the same event continuously. When a reel of film ran out, a dispatch rider rushed it off to be processed in a technicolour studio. Once it was developed, an editor cut and spliced the film – sound effects, music and commentary added later. Couriers then delivered the newsreels and their associated posters to cinemas and airports.



Long before the 24-hour news channel CNN was a twinkle in Ted Turner's eye, earlier than ITN, and preceeding even the BBC World Service, there was Pathé News. From 1901, when Pathé's first newsreel was shown in London, the 20th Century's most important events were captured on film and screened in cinemas all over the British Empire.

While British Pathé Plc is still involved in news reporting through co-productions with other broadcasting companies, it filed its last report on celluloid in 1970, leaving an archive at Pinewood Studios containing over 50 million feet of film – a source that's undeniably ripe for exploitation by multimedia developers. And that's exactly what Telstar has done in developing *Pathé News 20th Century Challenge*, a quiz you can either tackle solo or play head-to-head against one or two other players.

The game is simple – select one of four possible answers to a general knowledge question posed by the quizmaster, who makes a good attempt at the stiff-upper-lipped, British is best, Pathé style. He

declares Capital! or Pink gin! in a tone of cheery confidence when you answer correctly, or a consolatory Leg before wicket if you're wrong. Accompanying each question is a frame of newsreel video, but this rarely

provides any useful clues. If you're asked "In which Disneyland is the Epcot centre?", for example, there's no way you'd know it was Orlando from a clip of Goofy waving at kids from the theme park's train. And a black and white video of President Kennedy would not help you guess that it was Oliver Stone who directed the movie *JFK*.

The videos themselves inevitably appear more than once because there are 500 clips to go with 3000 questions. And you'll certainly need the Dunkirk spirit to get through that lot, especially since the questions rely more on general knowledge rather than careful study of

Pathé newsreels. It's also quite likely you'll run out of lives before the 40 questions are up, and be forced to listen to the sound of a cockerel being shot – an audible pun on the famous rooster in Pathé's title sequence.

A dozen different versions of the fowl titles are included on the second disc, along with more wackiness in the form of eccentric Brits jumping off tall buildings and tap-dancing on car roofs. You'll also learn that Charles Pathé was a Frenchman who bought patents to film cameras in 1896, and that Pathé's silent newsreels were accompanied by live

piano music for their first 20 years. But despite being able to search clips in a particular year or in categories such as politics and war, the verdict on this disc is best summed up by the commentator himself: "An opportunity squandered, old man!" (GS)



In the old days, even traffic jams were fun. People used to get out of their cars and dance on the roofs.

A black and white video of President Kennedy would not help you guess that it was Oliver Stone who directed the movie *JFK*.



This man provided voiceovers for Pathé newsreels. Would you buy a used moustache from him?



Pathé's colour broadcasts were introduced by a cheery can-can dancer sitting astride an enormous cockerel.



The cockerel crowed at the start of every Pathé newsreel, waking up cinema audiences waiting for the main feature.

DEVELOPER
Telstar Electronic Studios
PUBLISHER
Telstar Electronic Studios
CONTACT
01932 222232
PRICE
£29.99
MINIMUM SYSTEM
486 DX2, 16Mb RAM, double-speed CD.

A blast from the past is interesting for a few hours, but the novelty soon wears off.

PC REVIEW VERDICT

5



Leadbetter demonstrates driving, putting, and how to play out of awkward bunkers. In short, all the tips you need for a lower score.



Here's a menu of everything on the disc. Five coaching sections, some history, a customisable score card... and that's your lot.

HOW TO PLAY OUT OF A BUNKER
First make sure your bunker stance is firm by digging into the sand with your feet. Now stand parallel to the line from ball to flag. You're aiming to sweep the ball out by forming a triangle shape with your arms and club and bringing it down at a very shallow angle. Keep your arms straight, don't move your wrists, and you'll be home and dry.



THE OFFICIAL DAVID LEADBETTER GOLF ACADEMY

Forget your poncy plus fours, and Pringle sweaters. To beat Faldo over 18 holes you'll need professional coaching...

Golf is the best game ever invented for people who are too relaxed to compete in an energetic team or racket sport. Not only can you breathe lungfuls of fresh air during a pleasant four-mile walk across well-trimmed grass, but you also get to hit a little ball around at the same time. But golf is second only to tennis in the snobbery stakes, so to join your local club you'll either need a very large wad of cash, a relative on the committee, or possibly both.

While many play golf to enhance their standing in business and social circles, there are also those who play it as a serious sport. If you fall into the latter category, you're the kind of person who's likely to get the most out of *The Official David Leadbetter Golf Academy*. It's a coaching manual on CD-ROM by the man best known for correcting Nick Faldo's swing, and based almost wholly around QuickTime video clips. Rather annoyingly, they only fill about a quarter of the window and appear in the top right hand corner rather than the middle.

And there's no complementary text, apart from a short history section providing the sport's notable dates, from 1297 when the Dutch played a game called *Colf*, up to 1996 when Greg Norman became the first player to top \$10m in career earnings. Indeed, if your ambition is to challenge the

Great White Shark himself, you'll need to study the hour's worth of video footage in which Leadbetter shows you how to improve your swing, eliminate bad habits, and lower your score. The strategy section is disappointingly slender, listing a handful of blindingly obvious tips. To make par three, for example, you just need to "assess the situation... trust your swing... apply positive thought." Gee, should I hit that ball too?

Much greater entertainment is provided by Bill, an edgy American who confesses to feeling nervous at the tee. His fragile confidence isn't helped one bit by Dave's snide

comments. When his first drive lands in a wood some distance from the fairway, Dave jokes, "You might find an extinct tribe over there." And when Bill contemplates a tricky shot between two trees, Dave chides, "Who do you think you are? Seve Ballesteros?" Dave's irritating mantra is "Many, many amateurs have the same problem."

There's no doubt this disc will improve your game, provided you can at least hit the ball to begin with. But apart from letting you skip straight to a particular section of interest, there's little to recommend it over a conventional video cassette. **(GS)**



Fore! Mr Leadbetter sends a perfect drive down the fairway, and adds a red line so that you can see just how good it really was.



You'll discover that on short putts you need to keep a nice firm hold of the club, keeping the grip right up in your palm.

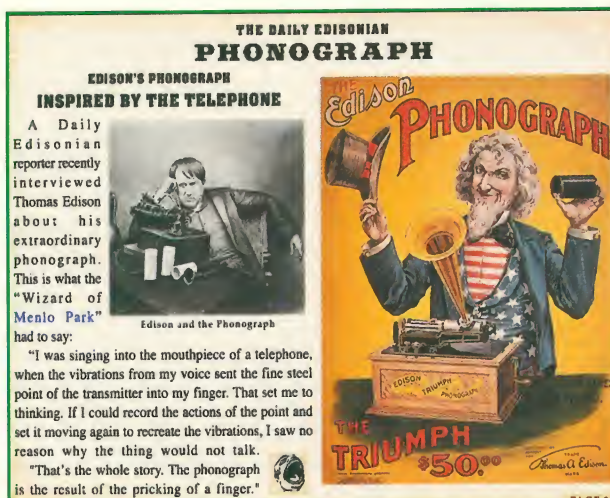
DEVELOPER
CTV
PUBLISHER
Telstar
CONTACT
0181 846 9946
PRICE
£19.99
MINIMUM SYSTEM
486 SX25, 4Mb RAM,
double-speed CD
drive, Windows 3.1/95.

PC REVIEW VERDICT
A good instructional guide from a leading golf coach, but little better than an equivalent video tape.

6

PROLIFIC INVENTOR

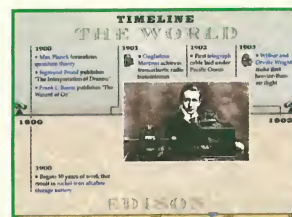
The Genius of Thomas Edison shows how this one man's inventions formed the basis of many things we take for granted. Edison can be said to have played roles in the development of the light bulb, the electric battery, electric train, telegraph and telephone, record players and all aspects of the movie industry. He also helped identify basic concepts which led to electronics and pioneered and refined many other inventions.



Each invention is put into its proper context as part of the Edisonian, which features other news headlines and advertisements of the day.



Many personalities and inventions are underlined in blue – click on them if you want to find out more.



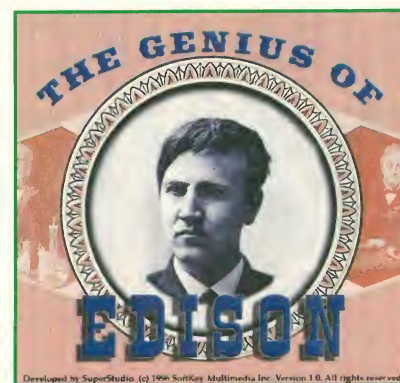
The timeline gives you a useful chronological context, citing major world events of the time.



Take a look at Edison's 'kinetoscope' projections of 1902.

THE GENIUS OF EDISON

Discover how world-renowned inventor Thomas Edison helped shape the 20th Century with this new CD-ROM.



The Genius of Edison is informative and entertaining, but a lack of content in some areas prevents it being truly authoritative.

Thomas Edison (1847-1931) has been revered as one of the greatest inventors, period. His inventions helped shape much of 20th Century technology, and *The Genius of Edison* attempts – and nearly succeeds – to offer a comprehensive look at his life and work.

Edison patented over 1000 inventions, 13 of which form the basis of this CD, including the phonograph, electric power station and the light bulb. Excellent animations show you how each invention worked, and you'll discover their historical context and how they were developed into the things we take for granted today. And movie buffs will love Edison's kinetograph and kinetoscope inven-

Edison was a prolific inventor, but just as derivative as those who refined his ideas.

tions, which were the forerunners of modern movie cameras and cinemas respectively.

A timeline of events linked to a database gives you a more detailed look at certain personalities and concepts, and the Daily Edisonian section, which resembles a 19th century newspaper, shows how Edison's inventions were received. It features adverts and headlines from the period to put them in their proper historical context.

But one of the major problems with *The Genius of Edison* is that it asks more questions than it answers. Considering the importance of electricity in all of Edison's inventions, there is no historical framework in

which Edison's scientific predecessors are presented. And there are several surprising omissions, including Edison's recognition of principles which would eventually form the basis of electronics.

You'll come away realising that Edison was a prolific inventor, but just as derivative as those who refined his ideas. Indeed, Edison was effectively beaten to the light bulb by British inventor James Swan, and only won the race by merging Swan's company with his own in order to gain the all-important patent. Edison's contemporaries aren't afforded as much attention as they deserve. Although *The Genius of Thomas Edison* has important omissions, there are enough animated sequences to make it an interesting and educational, if not essential, diversion. (NP)

DEVELOPER
Compton's NewMedia
PUBLISHER
Softkey
CONTACT
0181 246 4000
PRICE
£24.99
MINIMUM SYSTEM
486DX2/33, 8Mb RAM,
256-colour SVGA,
double-speed CD-ROM
drive

A well constructed look at Edison's life, but it stops short of being comprehensive.

PC REVIEW VERDICT

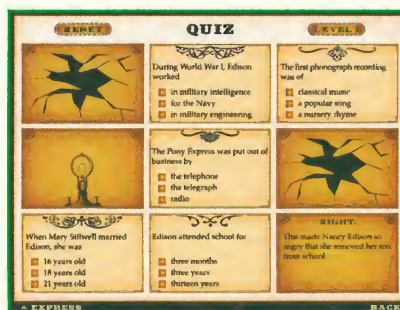
6



Each invention features a rendered animation sequence and narrated explanation.



The Wheel of Wonders screen introduces each invention with a movie sequence.



Once you've fully absorbed *The Genius of Edison*, test yourself with the inbuilt quiz.



This is a city with a secret. The children that used to crowd its streets are vanishing one by one, and no one knows where or why they've gone.



Perhaps Miette, a streetwise kid with a knack for petty theft could be the one with the skill and cunning to solve the mystery.

But can a child survive in such a strange and fantastical city, full of dangerous characters? Is she up to such a bizarre mission?

Or, more to the point, are you?

The City of Lost Children



dotlink™

Raider

PC System



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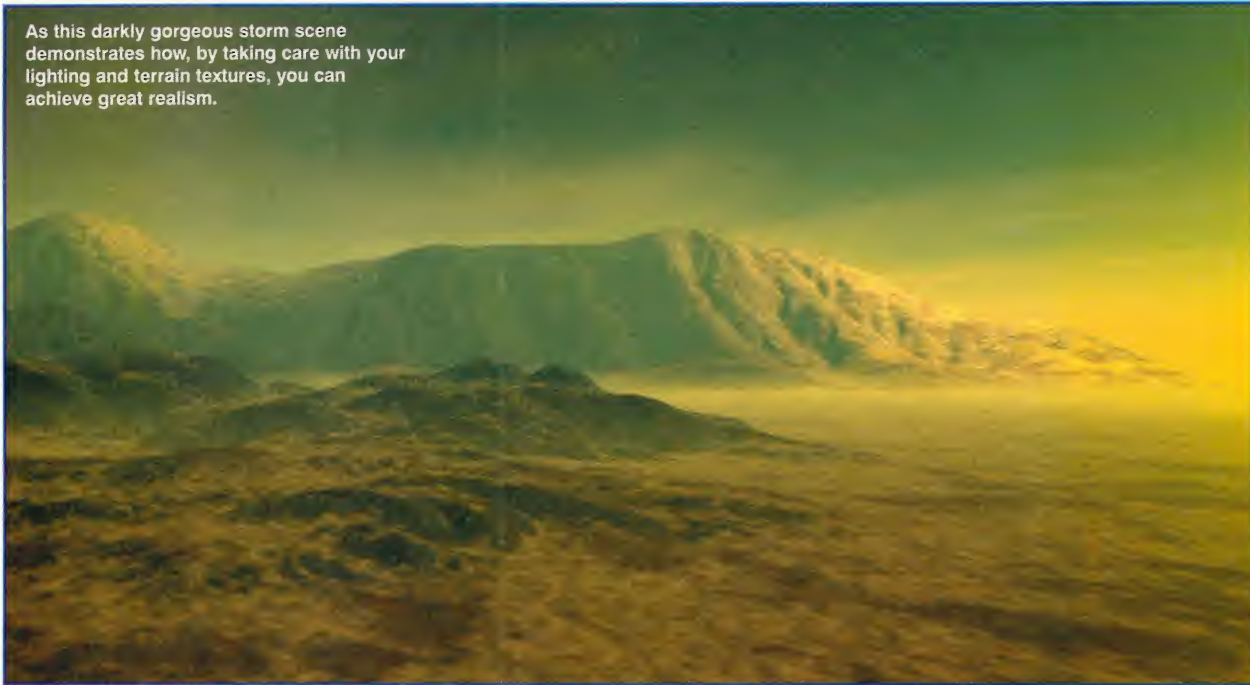


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As this darkly gorgeous storm scene demonstrates how, by taking care with your lighting and terrain textures, you can achieve great realism.



BRYCE 2

There might be a lot of 3D programs out there, but only one offers true landscape generation too. Are you ready to explore new horizons?

God, they say, took seven days to create the world. With *Bryce 2*, however, you can do it in nearer seven minutes (with a little extra time thrown in for the rendering)...

At first glance, you'd be forgiven for thinking that *Bryce* is just a landscape generator like *Vista Pro* or *World Construction Set*. Mind you, that wouldn't be such a bad thing, for the numerous demo images feature all manner of gorgeous scenes, from mountain ranges, to rivers, to seascapes and arctic wastes. There are golden sunsets, rough seas, clear mountain lakes and misty glades. Quite frankly, the images are beautiful, and even just as they are, they form an inspira-



Poor though its modelling abilities may be, with perseverance (or a pre-created model!), you can turn out work of this quality.

tional example of the program's versatility. Yet in addition to the landscapes it can create, *Bryce* also provides you with a series of modelling tools that allow you to build objects in your world from component 3D shapes.

You can create landscapes in three ways: by importing a 2D bitmap, by using a fractal generator or by drawing one from scratch. By default, the program generates a fractal landscape. Although they are detailed, these tend to look very samey, being little more than mountain ranges in the midst of a plain. You can't manually adjust the fractal seed or other parameters, so it's impossible to return to favourite landscapes if you forget to save them. Nevertheless, fractal landscapes are quick and easy to generate, with no user skill required.

For a more hands-on approach, you can

always draw your own landscapes. Starting with a blank canvas, you can add features of varying elevations until the terrain looks how you want it to. The drawing tools are very basic, consisting of nothing more than a pen whose size and sharpness can be adjusted. The pen's function can be altered, though, and one of its most useful modes is as an erosion pen. In this mode, the pen erodes ▶



By adjusting its properties, you can create subtle water effects like this, or turbulent and broiling oceans.

THE WORKS



Quality colour printing used to be the preserve of professional publishers, because laser and dye printers cost thousands of pounds. Now, though, you too can brighten your documents with an affordable inkjet – my printer reviews start on page 98.

Having bought one, you'll want to try it out by producing some spectacular scenes. *Bryce 2* is a 3D tool that's perfect for making natural looking terrains. However, even the most powerful Pentiums sometimes buckle under the strain – you can upgrade to MMX now with the help of our special How To guide.

Mat Broomfield
Technical Editor
pcreview@futurenet.co.uk

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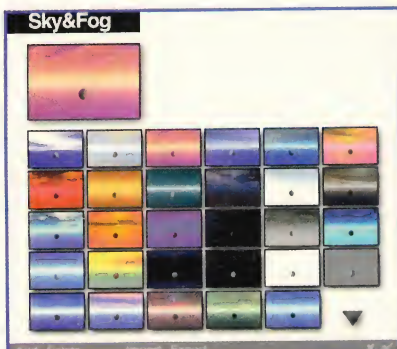


THE COMPETITION

Although landscape generators are few and far between, there are a couple of alternatives. The best known is Vista Pro, the fastest renderer in town. It uses very low-res DEMs to create real-world scenes. You can alter the cloud, sun height and terrain colour, as well as adding up to four types of vegetation, in varying densities. However, the end results look distinctly computer-generated, mainly because phong shading is its most sophisticated rendering engine. Still, Vista is cheap and works well, even on the slowest PCs.

A professional alternative is offered in the form of World Construction Set, and what it can't do, you don't want! For starters, it uses high-res DEMs for absolute realism. As with Vista, you can add trees, clouds, terrain types, even waves on the sea. Unlike any other program, though, it includes full animation of all parameters, enabling you to create scenes showing the passage of hours or months. The models are based upon the Earth's true curvature, enabling you to generate trans-global animations if you want.

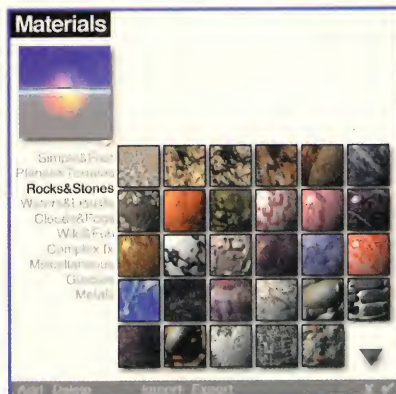
A budget rival to Vista has just been released, although we know little about it. It's called Vue D'Esprit, and you can learn more at http://ourworld.com/puserve.com/homepages/vue_d_esprit.



The sky and fog palette offers you a selection of ready-made effects, but most are a little too dark in actual use, so you'll need to adjust the lighting too.



Although you can import DXF models, Bryce comes with many predefined rocks, plants and other objects. Here's a selection.



Materials are grouped into classifications. You can make your own materials, but the ones that come with the program are so good that you may never need to.



Bryce provides algorithmic textures that change with altitude and slope angle. They're very effective for reproducing stratified effects, such as this arctic terrain.

► the underlying terrain in a way very similar to true rain erosion, following the landscape's contours. Last but not least, you can create a landscape by importing a bitmap.

All landscapes are created using 256-shade greyscale images that are converted into elevation data. That means that any greyscale image can be used as a terrain map. This is just as well, because the program doesn't offer a DEM import mode, which would otherwise enable you to load the digital elevation maps used to model real landscapes. At least, its greyscale import provides a compromise.

Once you've created your basic landscape, you can easily alter it in the terrain editor, a sub-program that provides filtering and sculpting tools to quickly modify entire landscapes. In this editor, you can add subtle noise erosion, or huge ravines and mounds.

Of course, a landscape is about far more than its mere shape, and Bryce provides you with tools to add sky, clouds, haze, fog and water. All of these features are added as materials, whose attributes you can specify. There are dozens of pre-defined materials, some of which are simple bitmaps, whilst others are far more complex 3D mathematical textures. Materials may be applied to any object, but sky, clouds and ground are considered to be infinite planes, and materials assigned to them are more than mere bitmap overlays. For example, if you set the water

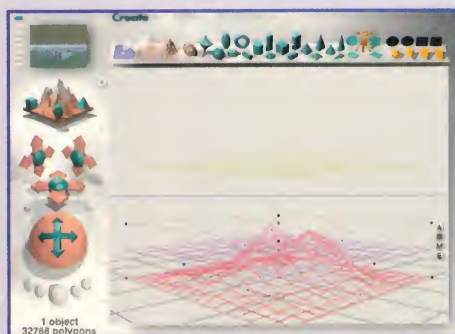
level halfway up a land mass, and apply a semi-transparent water texture to it, it will enable you to view the land as it sinks into the water – perfect for creating beaches or stony river bottoms!

Terrains are just one type of object, but a scene may contain many others. The program provides you with a number of primitives – simple shapes (such as cubes, cones, spheres, etc) that can be joined to make more complex models. These primitives can be freely rotated, scaled, stretched and squashed. There are also tools for aligning objects with each other, a feature which is particularly useful in the light of Bryce's Boolean modelling. This is a technique whereby one shape is used as an operator upon another. For instance, you might use a sphere to cut a circular hole in a cube.

Boolean modelling is really in vogue at the moment, and its presence is rather odd given the fact that the program doesn't enable you to perform far more basic modelling functions, such as bending, twisting and shearing. At least there is one compensation, and that's its ability to import DXF format models from other programs – although you can do precious little with them once they're loaded.

There's also a selection of default models including various types of plants. These are very complex, and even just a couple in a scene will slow it down to a crawl on the

Six Steps to a Great Bryce Picture



1 Load the program and create a fractal terrain by clicking the terrain button. Click the cloud, water and ground planes too.



2 Go into the Terrain Editor and use the tools to customise the terrain – clicking and dragging applies effects by degrees.



3 Go into the Materials editor and choose a suitable texture for the terrain. Now do the same for the ground, cloud and water planes.



Bryce is widely used by artists designing book covers and posters. This magical scene demonstrates why.

very fastest PC – rendering times become so great that you might as well watch a film while the program does its stuff. Water slows things down even more...

From the first second you use it, you know that Bryce is not going to be just another run-of-the-mill program. It has a very un-Windows-like interface for starters. There's a menu at the top of the screen if you really need one, but the program has been designed to be as friendly as possible, and that means no unnecessary clutter. The concept of a clean interface that shields you from unnecessary complexity is very much at the heart of Metatools' software philosophy, and it oozes from every pore of the program.

The idea is not to avoid complexity altogether, rather to introduce it to you gradually, as you become competent enough to appre-

ciate and use it. For example, the display settings are not immediately visible, even though they're permanently on-screen. In fact, they're arranged in a row down the right edge of the screen. However, as you won't need them most of the time, they remain invisible until you click the cursor over that part of the screen specifically looking for them – whereupon they gently fade into view. And once you've used them, they fade away again.

At first, this design takes a little getting used to, but after a while, you warm to the



Although it takes a lot of effort, you can combine multiple terrains to produce layered scenes such as this one.

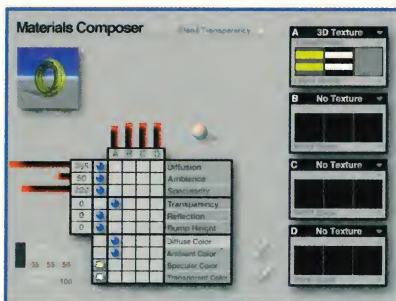
idea of an interface which isn't perpetually in your face.

There's no doubt that Bryce is powerful, and it's a lot of fun to use. But, unlike other 3D modelling software, it's more about look and feel than precision. With patience, you could create real terrains populated with complex models, and the program's greatest strength is certainly its ability to combine both in a single environment.

Bryce is far better suited to people who like to dabble than those with specific scenes or landscapes to render. (MB)

BRYCE ACCESSORY KIT

If you own Bryce, you might be interested in the Bryce Accessory Kit from 3D Software. The kit contains 100 models, loads of new materials, skies and environments. In addition, there are tips and tutorials to help you get the most from the program. It costs £57.58 and is available from Principle Distribution on 01756 704000.



For really original scenes, use the materials composer to design your own complex textures for mapping on to objects and terrains.



It is possible to include trees and bushes in your scenes, but each one must be individually 'planted', and takes masses of extra processor time.

DEVELOPER
Metatools
PUBLISHER
Principle Distribution
CONTACT
01756 704000
PRICE
£233.83
MINIMUM SYSTEM
486DX, 8Mb, Win95,
50Mb hard disk
space, CD-ROM,
SVGA

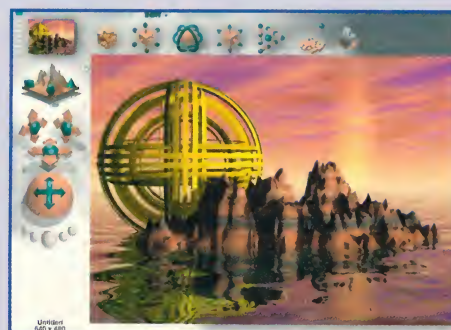
Bryce 2 is a real joy to use, although creating specific scenes is time-consuming.

PC REVIEW VERDICT

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4 Now add some simple models and align them before assigning materials – there are plenty of excellent materials to choose from.



5 Using the positional controls, set the sea and cloud levels, then select the camera position and viewpoint you want.



6 Now it's time to sit back as your PC renders the finished image – et voilà, an instant rave flyer. FSOL eat your heart out!



FIRST AID 97

DELUXE

PATCHING UP SOFTWARE

Even though most applications are rigorously tested before release, minor bugs are almost always discovered later due to the sheer number of users. To address the issue, publishers often place software to fix the problems, called patches, on the Web for free download. Links to these sites are contained within First Aid 97 Deluxe, as well as a program called Oil Change, which connects to CyberMedia's own page to update itself.

Whether your PC has a minor ailment or a terminal illness, this program is on call to dispense an effective remedy.

Sometime, somehow, something will go wrong with your PC. Whether it's a minor crash or a potentially catastrophic system failure, sooner or later you'll be struggling with a sick system.

One way you can nurse it back to health is to invest in dedicated software like CyberMedia's *First Aid 97 Deluxe*, which handily includes a copy of *Dr Solomon's FindVirus* to deal with that other bane of a PC user's existence. Just don't expect a miracle cure, though, because this type of application performs more like a junior doctor than a Harley Street surgeon.

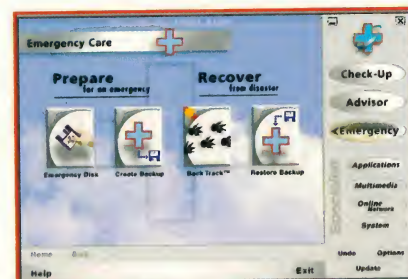
First Aid 97 is designed to offer peace of mind by lurking in the background and popping up just in time to deal with crashes – the kind that are inevitably accompanied by the message: "This program has caused an illegal operation and will be shut down."

In fact, it's also supposed to deal with other types too, but was notably less successful at dealing with a dropped Internet connection, a rogue installation program or a lack of memory when several applications were running simultaneously. When it did arrive promptly on the scene to resuscitate

an ailing application, a click of the AutoFix button was usually sufficient to get Windows on its feet again. At other times it saved the PC from crashing immediately without actually curing the problem.

Much more impressive is the Check-Up *First Aid 97* can perform on your system's hardware and software to diagnose existing trouble-spots and suggest improvements to Windows' efficiency. After examining relevant files in a range of categories from Hardware conflicts to Printing, it presents you with a list of the problems and their causes.

Generally you can solve them immediately by clicking the AutoFix button, but sometimes the only solution is to opt for a Manual Fix. The same applies when you're using one of the specialist tools to examine particular applications, multimedia elements, system components, or your on-line connection. Installing the missing spellcheck facility in *Microsoft Word*, for example, was a simple matter of pointing *First Aid 97 Deluxe* at the CD drive containing the installation disk. Less helpful are the times it calls up Windows' own screens, such as the Device Manager, and leaves you in the hands of



However well you care for a PC, sooner or later a serious illness strikes. But you can use First Aid 97 to take preventive measures...



Sometimes a niggling problem gets past the routine check-up, or else you don't want to assess the entire PC. In that case, you can call on an expert like the Online Specialist.

native help documents. That said, *First Aid 97's* Advisor is an invaluable resource for those who are less familiar with device drivers and Registry settings. A problem can be cured simply by clicking on a picture of the troublesome component. Then you pick a solution by choosing from the range of options available, or employ the Web searcher to locate help on-line. There are even contact addresses and links to manufacturers' own Web sites.

On balance, *First Aid 97 Deluxe* is undeniably effective at troubleshooting, but can't be considered a panacea for all PC ills. (GS)

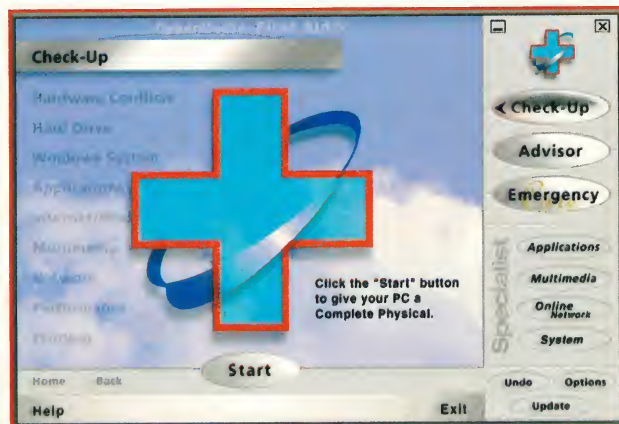
DEVELOPER
CyberMedia
PUBLISHER
CyberMedia
CONTACT
0800 973 631

PRICE
£49.95

MINIMUM SYSTEM
386, 8Mb RAM, 17Mb
hard disk space, CD
drive, Windows 95

Excellent for
troubleshooting
problems, but
can't cope
always cope
with crashes.

PC REVIEW VERDICT



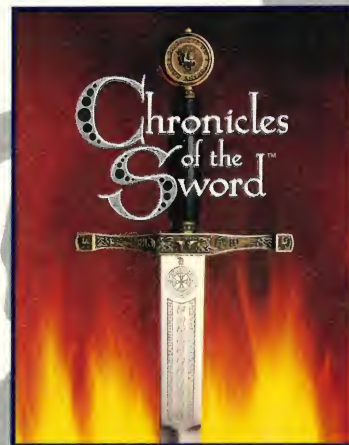
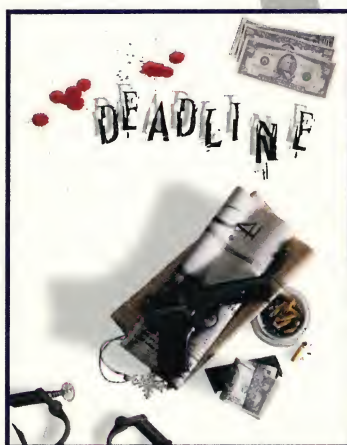
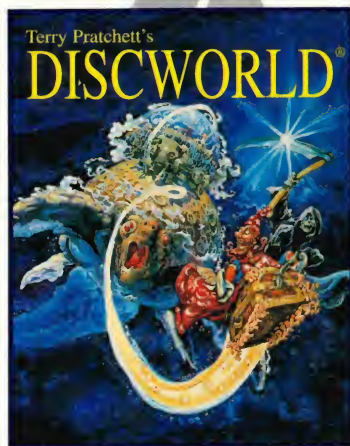
First Aid 97 gives your PC's software and hardware a thorough going over. Think of it as a physical and mental check-up.



Advisor is the best part of First Aid 97. Click on the ailing component and the software searches its database, or the Web, to find a cure.

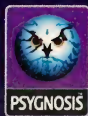


The Mark of Distinction



ARGENTUM COLLECTION

PC
CD
ROM



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miroMedia Online



You can access the card's various modules via the miroMedia Manager, which can also be iconised on your desktop.

What, take a modem and sound card into the shower? Not us, we just install the miroMedia Online and go.



Here's the miroMedia Online with the optional radio card fitted. It's an ideal product for system builders.

Unless you've been very lucky, you've probably experienced hardware conflicts at one stage or another. Nothing can be more frustrating than trying to unravel conflicting memory addresses, IRQs and ports. Plug and Play has helped, but when things get nasty, it can make matters worse, disguising conflicts rather than resolving them. But here's a great solution from miro – a combined wave table sound card, modem and radio card.

Last month we looked at an integrated graphics card and sound card from Connectware and, although it was a good idea, it was sadly lacking when it came down to the quality. Integrated cards like these are definitely the way of the future, but after our experiences with the Connectware card we greeted the arrival of miro's offering with some apprehension.

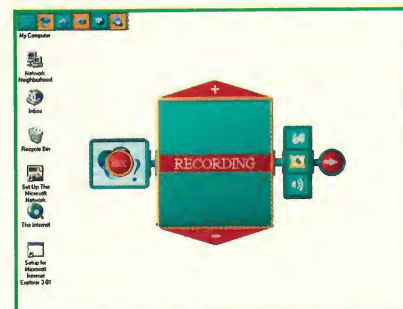
Straight away, though, the miro card scores over the Connectware sound card because it incorporates a wave table sound card, which means high-quality music in addition to 16-bit Sound Blaster compatibility. Despite the fact that the card comes with 6Mb worth of instruments, they're stored on disk rather than in ROM, which makes the card less efficient.

The sample quality is very average – better than FM synthesis, but not as good as the AWE32. The radio is an optional – and at

Although there's still room for improvement, the miroMedia Online is a big step in the right direction, and it's far better than the Rastermedia board from last month.

£81, extortionate – add-on. It uses RDS tuning, which is a system that provides additional data such as traffic updates, digital station ID, the time and more. This information is included in the standard radio carrier wave and can be decoded by the tuner. You can specify up to 40 station presets, any of which may be selected via the on-screen remote control. One bonus is the ability to record directly from the radio to your hard drive.

In this age of networked global telecommunications, a modem is almost essential if you don't want to turn into some kind of information hermit. If you don't already own a modem, or you only have a 14.4Kbps per second device (or slower), the miroMedia is a perfect upgrade because it incorporates a V34 modem, which transfers data at



If you add the optional radio card, you can record directly from live broadcasts.

28.8Kbps. Of course, all that speed won't help if your Internet server is constantly congested as some are, at least at certain times of the day, but if you use a good service provider, you'll be whizzing round the Web in no time.

The package includes a full version of *Microsoft Phone* too, so you can set up a full digital answerphone system, with multiple mailboxes and the facility to record unlimited messages directly to your hard disk.

One great advantage of this system, is the fact that unlike tape-based answerphones your callers don't have to wait ages while the tape rewinds before they can leave a message, even when dozens of previous callers have left messages already.

Naturally, the modem can also send and receive faxes, but there's no fax software, although the caller ID feature is some compensation.

The entire bundle is accessed via a friendly front-end called the *miroMedia Manager*. This can either appear as a small row of buttons on top of your current screen, or you can display it full screen. The *Manager* provides quick access to the various hardware elements, such as the CD player, radio, modem, etc. For precise control, you use the *User Configuration Manager* to set up each hardware element. (MB)

DEVELOPER

miro

PUBLISHER

miro

CONTACT

01494 510250

PRICE

£198.58

MINIMUM SYSTEM

486, 8Mb, Windows

95, 5Mb hard disk,

CD-ROM, 16-bit

ISA slot

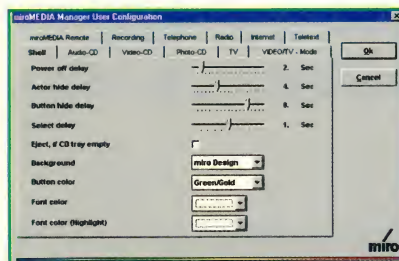
You wouldn't want to upgrade to this card, but if you don't have a sound card and modem, it's an ideal starting point.

PC REVIEW VERDICT

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miroMedia View TV

miro also produces another card in the family called the miroMedia View TV. As its name suggests, it's a TV card, but it's also a graphics and MPEG playback card too. The fourth element of the card, is video capture, which you can use to record directly from the TV, or from an external input. Unfortunately, it's not 3D, but like the Online card it's designed as a middle-of-the-road, one-step, integrated solution. In all probability, the largest user for both cards is going to be OEM suppliers and computer assemblers who, in two easy installations, can provide their customers with six or more different components.



The Configuration Manager is used to set up the miroMedia card components, including the miroMedia View TV if you have one.



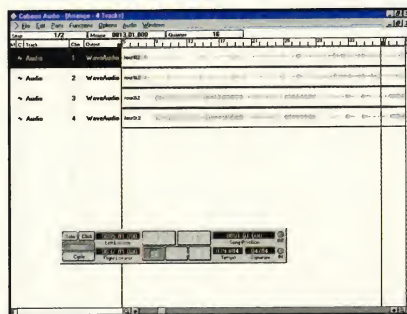
AWE64 GOLD

They say that silence is golden. So, however, is the latest and greatest board from Creative Labs – a sound card that's got the PC REVIEW office making a whole lot of noise.

Though they can be expensive and very hi-tech, it's hard to think of sound cards as luxury items. Compared to Ferraris, Vaurnet sunglasses and Blaupunkt stereos, these six-inch circuit boards look positively utilitarian. Grotty, even. The luxurious orchestral sounds the AWE64 Gold is capable of, however, might just change the way we think about our audio boards.

The AWE64 Gold is based closely upon the AWE32. As far as your games are concerned, it'll still function as an AWE32 and a Sound Blaster 16, so backward compatibility is no problem – it works with everything. End of story. There are three new features that make the AWE64 very exciting, though: higher polyphony, better sampling quality and better wave table instruments.

Like most decent cards, the AWE64 has a bank of on-board instrument sounds that can be used by musicians and programmers to provide rich musical compositions either by themselves or as background music in games and multimedia programs. These instruments are accessed using MIDI commands in programs such as *Cubase* or *Cakewalk*. The card also conforms to the



In addition to lots of great home-grown software, the AWE is supplied with Steinberg's superb Cubasis Audio sequencer.

General MIDI standard, which allows for the replay of up to 32 simultaneous notes using a maximum of 16 different instruments (chosen from an orchestra of 127). The AWE64 lets you play 64 notes simultaneously, although you can still only use 16 instruments at a time. This is an excellent feature, but as many orchestral pieces don't require that level of polyphony it's luxury some composers will never even use.

One MIDI feature that will benefit even the simplest of compositions is the new way

A cheaper alternative

If you don't need the professional features of the AWE64 Gold, you might like to consider its little brother, the AWE64. The vanilla 64 doesn't have the gold-plated connectors, or the same high-quality audio. Gone is the 4Mb of user-memory, and there's no sign of *Cubasis Audio*. A standard 3.5mm jack replaces the RCA phono outputs, too.

However, the AWE64 still provides 64 note polyphony, superior wave-table instruments and absolute compatibility, all for the price of £149.

of producing wave table instruments. Most cards simply take a sampled instrument and replay it at various pitches as needed. However, this simplistic approach fails to allow for the fact that many instruments actually change their acoustical properties as their frequencies change, so merely altering the pitch fails to accurately reproduce the subtle harmonic changes that can occur.

The AWE64, however, uses Sondius Waveguide Synthesis, which is a mathematical technique for modeling the properties of instruments. The theory behind this is very complicated, but suffice it to say that the instrument quality is much improved over the AWE32, and the accuracy of the sounds should satisfy musical purists.

The 64's greatest improvement is its superior audio quality. This comes as a result of improved component quality and gold-plated connectors. For professional sampling, one of the most important factors is the signal to noise ratio – in other words, how much electrical interference there is, relative to the audio source you're trying to record. In the past, Creative cards have always been among the worst where this is concerned, but in one fell swoop, they've leapt right to the top of the pile with a signal to noise ratio of 90 decibels, which is equal to Turtle Beach's superb Pinnacle card. This means that you can easily use it for CD quality mastering. Incidentally, the card uses phono outputs, rather than the more traditional 3.5mm jack. This is ideal because it means that you can easily connect it to your hi-fi.

The AWE64 is the most exciting sound card ever to hit the home market. It even noses ahead of the Maxi Sound 64 we reviewed the issue before last (PCR65). At last you can enjoy professional quality and total games compatibility. (MB)

WHERE'S THE DAUGHTER-BOARD CONNECTOR?

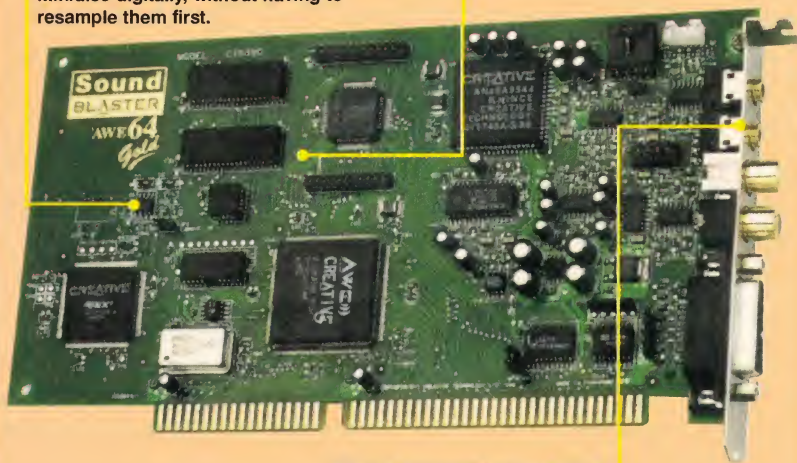
One very obvious omission from the two AWE64 cards is a daughter-board connector. Most good cards have one, and it enables you to add a wave-table upgrade card such as the Yamaha DB50XG. Creative was hit hard by the release of the Yamaha card, and this seems like an attempt to push Yamaha back out of the market. If you want the versatility of an XG card, you can still add one in the form of the SW60 or the MU10, which both work independently of your sound card.

Sounds good

The new AWE64 is a small card with a big heart. It's the one many people have been waiting for.

The SPDif connector is important for pros, because you can use it to transfer recordings to your computer from DAT or Minidisc digitally, without having to resample them first.

The card comes with 4Mb of user-memory as standard, but you can add another 8Mb using proprietary RAM modules.



With its gold-plated connectors, the AWE64 provides unsurpassed sampling quality.

DEVELOPER
Creative/E-mu
PUBLISHER
Creative Labs
PRICE
£199
CONTACT
01734 344322
MINIMUM SYSTEM
P90, 8Mb RAM, DOS 5, 16-bit ISA slot, CD drive

PC REVIEW VERDICT Huge sigh of contentment! Great for games. Great for sampling. Great for music. It's simply, well, great!

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in Europe's
most popular
Internet
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VENTURA 7

Why should you buy a separate program each time you want to publish in a different medium? Ventura 7 does it all...

This is an information age and effective communication can bring great success. Everyone has something to tell you, and there's never been a broader range of media for sharing knowledge. Of course, there's still a place for paper, but CD-ROMs and modems mean that you can swap information using multimedia, Web pages and portable electronic documents. Desktop publishing means that even beginners can produce exciting and professional-looking documents, and now thanks to *Ventura 7*, you can publish media of every type using a single program. It's a logical step; after all each type of publishing is essentially about creating a presentation which is interesting, while still imparting whatever it is that you want to say. There are certainly differences between the types of data that each medium enables you to present, but the core of each one is the same.

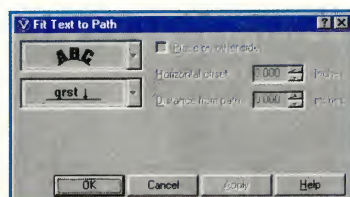
Ventura 7 has been completely redesigned for Windows 95, using fast 32-bit code. Even before you start using it, you encounter a good idea: as it loads, the program asks what type of document you'll be creating, then modifies the tool palettes accordingly. This concept of clean minimalism has been propounded by Metatools for a long time, and it's nice to see that another company seems to have picked up on it. The theme is continued throughout, and it's particularly evident in the functioning of the cursor and dia-

log boxes. With most programs, you select the cursor appropriate for the action you want to perform. It may be very precise, but it fills the toolbar with different cursors. 90 per cent of the time the cursor auto-detects the type of action you want to perform, and modifies itself accordingly. Similarly, instead of a separate dialog box for each action, a single box adjusts itself to each situation.

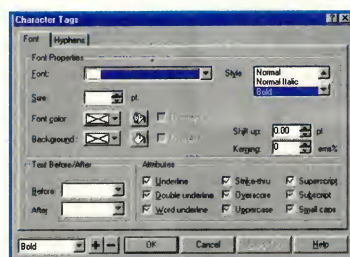
Because *Ventura 7* can now publish documents for several media, there are new tools, and the existing ones have been

enhanced. Like most DTP packages, the basic design stages remain the same, so creating a page still consists of drawing a frame and populating it with data. That data may be as innocuous as text or a picture, but thanks to the program's support for multimedia and HTML, it could be something more exotic like an animation or audio clip. In fact, pages can be published in the following multimedia formats: HTML, Novell Envoy, Adobe Acrobat, Common Ground, with support for Java publishing via Barista.

Among the most useful new features are multiple undos, new drawing tools, character tags for quickly changing the attributes of text, portable fonts so that electronic documents look the same at the other end as they did when they left you and, lastly, conditions. These enable you to set the conditions under which parts of a document may be viewed. In essence it works like PageMaker's

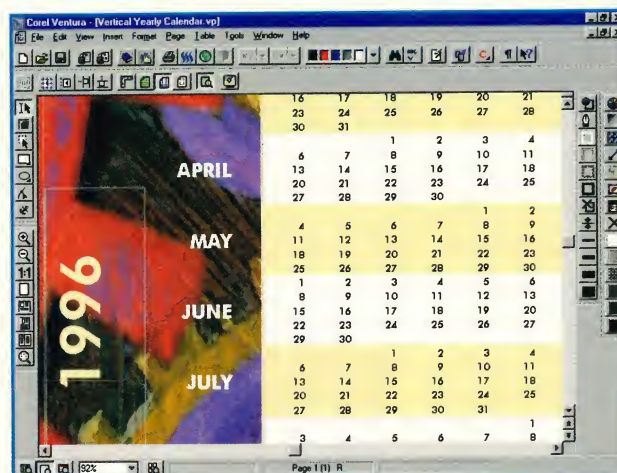


The ability to fit text to a path makes it much easier to create exciting titles within the program.



Tags enable you to alter the style of any piece of text from one character to an entire document, at a single click.

character tags for quickly changing the attributes of text, portable fonts so that electronic documents look the same at the other end as they did when they left you and, lastly, conditions. These enable you to set the conditions under which parts of a document may be viewed. In essence it works like PageMaker's



The latest version of Ventura is completely redesigned for Windows 95. Its interface is more intuitive and there's less clutter... supposedly.

Also in the box

Corel is a master at adding value to its software, and *Ventura* is no exception. In addition to the main DTP package, you'll find the following major programs in the box: *Word Perfect 7* for word processing, *PhotoPaint 6* for photo editing, *DataBase Publisher* for enhancing the presentation of databases and *CD Creator 2* for cutting CDs. There are also a selection of extra utilities: *Script Editor* for creating *Ventura* macros, *Versions* for archiving successive file versions, *CorelDepth* for creating 3D objects from text and vector graphics, *Capture* for screen grabbing and *CorelMemo* for inserting post-it notes into *Ventura* documents.

layers and can be used for multilingual support, or to provide documents that adapt to the security clearance of the viewer.

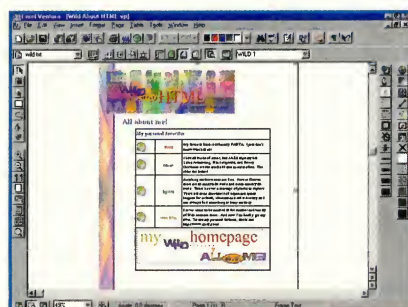
Ventura has always been one of the less popular DTP packages, and the reason for that is simple: it just didn't feel right. Sure, the feel of a DTP package is often subjective, but there's something clunky about earlier versions of the program. Corel has thought hard about how to improve things, with some success. It's not that it's suddenly the most elegant package on the market – that honour is still held by *QuarkXpress* – but *Ventura* has so many new features, that it compensates for the lack of fluidity in other areas. (MB)

DEVELOPER
Corel Corporation
PUBLISHER
Channel
Marketmakers
PRICE
£581.63
CONTACT
01703 814142
MINIMUM SYSTEM
486/DX2, 16Mb RAM,
Windows 95, 65Mb
hard disk space, VGA,
CD drive

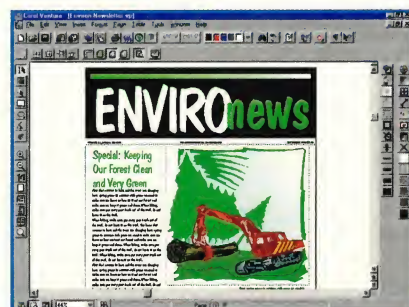
PC REVIEW VERDICT

It's not the best paper DTP package, but for cross-media publishing, no other package is so complete.

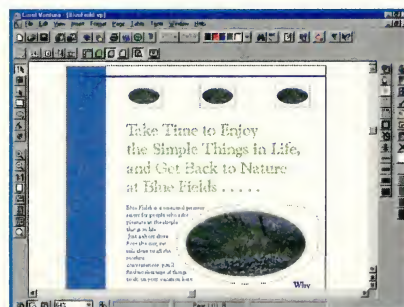
7



With support for Java and HTML, *Ventura 7* is as at home publishing pages for the Web as it is with pages for your church newsletter.



With its intelligent cursors and dialog boxes, it's far quicker to navigate your documents with this version of the program.



For all its new features, *Ventura 7* is still first and foremost a traditional DTP package, and it's among the top three.



WHAT IS A PROFESSIONAL SAMPLE?

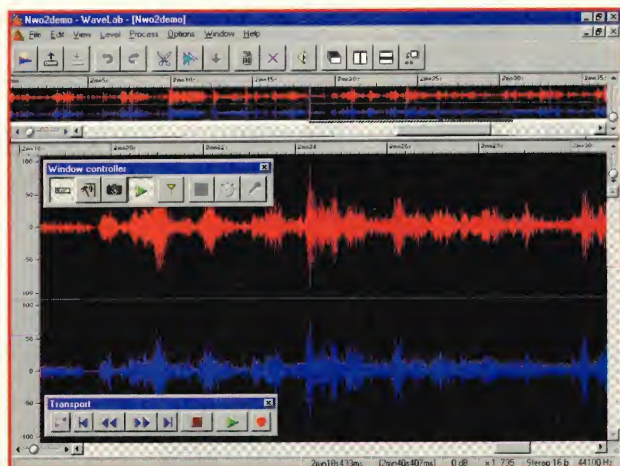
Professional samples are a result of four factors: the source quality, the sampling frequency, the sampling resolution and the signal to noise ratio. Of course, only you control the quality of the original material. If you record your singer performing on a building site, no amount of sampling equipment is going to improve your recording! CDs are recorded at 44.1kHz at 16-bit resolution. DAT is slightly higher at 48kHz, although the resolution remains the same at 16-bit. Most sound cards are capable of recording at CD quality, and a good number can manage the higher frequencies stored on DAT tape. However, the fourth factor is more elusive, and it's only now that home cards are concerned about signal to noise ratio. The term refers to the balance between unwanted background interference caused by the card's own circuitry, and the sound you're trying to record. A figure over 80 is desirable. Cards such as Orchid's NuSound start at well under a hundred pounds, while the AWE64 Gold and the Tropez Plus represent the mid-range, with the Pinnacle towards the high end.

DEVELOPER
Steinberg
PUBLISHER
Harman Audio
CONTACT
0181 207 5050
PRICE
£399
MINIMUM SYSTEM
P90, 16Mb, SVGA,
15-inch monitor,
fast hard drive,
sound card

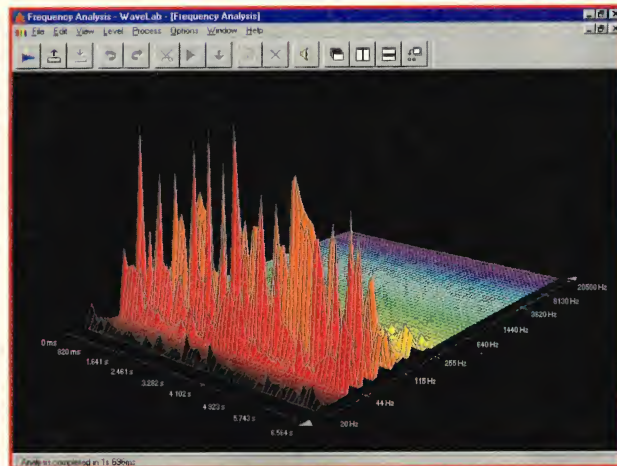
If you're serious about sampling, Wavelab is the tastiest in town.

PC REVIEW VERDICT

8



It may look a bit basic, but that's Wavelab's strength. It houses a very powerful set of professional tools.



3D Frequency Analysis is just one of the many features that awaits anyone who scratches beneath the program's simple exterior.

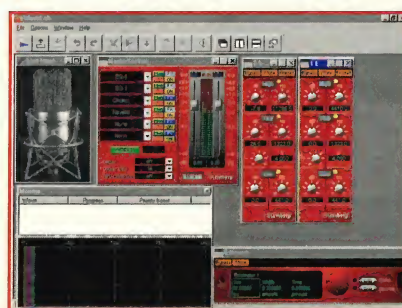
WAVELAB 1.5

Can you do studio quality sound sampling on your PC? With Wavelab, Steinberg says: "No problemo!"

To do commercial quality sound sampling on your PC, you'll need two things: the right software and the right hardware. Thanks to the new AWE64 Gold (reviewed on page 93), pro-quality hardware is within everyone's grasp, and with this latest version of Wavelab, you have the software to match.

When it comes to samplers, there are generally two types: single track and multi-track. Multi-track ones such as SAW and Samplitude turn your PC into a recording studio, simulating a mixing desk on your hard drive. But they're very resource hungry, and usually complicated. Wavelab is the other type of program. Instead of giving you tonnes of features for handling lots of samples at once, it manages just one (or two if you're doing cross-fading or cut and paste).

This does reduce its scope in one area, but because its interface is so unfettered, it means that you can very quickly record and process sound samples. If you need the features of a multi-track studio, there's nothing to prevent you from importing your sound



With the Master Section, you can perform and adjust multiple effects on any sound source in real-time.

samples into a sequencer such as Cubase Audio or Cakewalk Audio. The advantage of doing things this way is that your samples are immediately integrated with your MIDI tracks, making it far easier to combine the different types of audio data.

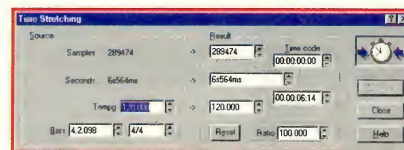
The greatest addition to this version of Wavelab is the Master Section, which is used to add real-time effects to any input. That means that you can connect a microphone or instrument to your sound card and apply multiple effects as it plays. That makes Wavelab useful for previewing effects before committing to them, and as a live performance tool. The Master Section comprises six slots into which you can install effects. In addition to the supplied effects, you can also buy extra plug-ins, from Steinberg and third parties. The effects are applied to the live or pre-sampled audio in sequence, then the processed audio is output as normal.

However, here's where another new feature comes in because Wavelab now offers dithering too. This feature is used to eliminate noise artefacts which are introduced by the application of digital effects at different resolutions. Wavelab now supports 8-, 16-,

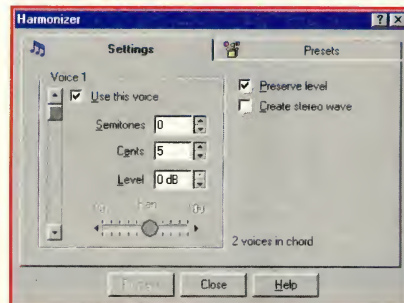
20- and 24-bit sampling and replay if your card can do it.

All this talk of 24-bit recording and real-time effects is very high-tech, but it's not what most people use Wavelab for. What most people need is software enabling them to record samples and perform basic editing upon them, and that's where Wavelab really scores. With big, accessible buttons, straight-forward icons, and a functional display it's the nicest program we've ever used. If you want more advanced features, such as a parametric equaliser, frequency analysis or time stretching, they're there, tucked away unobtrusively in the various menus.

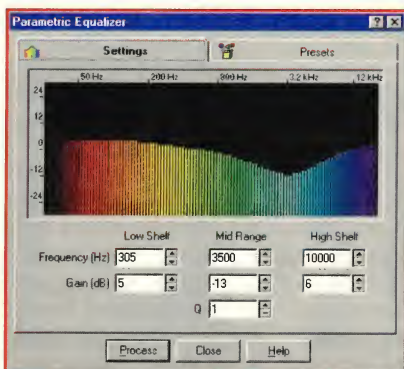
Wavelab is a model of elegant efficiency. It's so quick, intuitive and easy to use that your productivity will be greatly improved. Despite that, it provides some very advanced editing and filtering features. (MB)



Time Stretching is a great feature for fitting a sample to a duration without modifying pitch.



A decent harmonizer could cost £500, but it's just one of the features found in Wavelab.



If you know how to use it, you can adjust the frequency balance of your samples using the Parametric Equaliser.

often means more of the same. But in this case new means different. Different because we have pumped 132 colour pages full with straight talking bike and accessory tests. Read the bike buyers bible...

**Issue one
comes with
a set of hex
keys FREE**



**HITS THE
SHELVES
LAST
WEEK OF
APRIL**

**PRICE:
ONE QUID**

GIVES IT TO YOU STRAIGHT

20 SHADES RATED

Total
Bike

20 SHADES RATED

**LOCK IT AND
LOSE IT!** 30 locks
trashed

USED & ABUSED

How to buy secondhand

BIKE SHED
Every new bike on the
market listed and rated

Eight £500 cycles
in our exclusive

MONSTER BIKE TEST



SEE IT, PRINT IT

The gulf between what you can imagine and what your printer can actually produce is being swallowed up. And it's this batch of stunning output devices that's doing all the swallowing...

Something strange has just happened. After years of gradual but steady improvement, the quality of colour printers has just leapt through the roof. Last year, it seemed easy to predict the course of the next five years' printer developments. We thought a steady process of tweaking software and making more compact components would result in gradually improving prints.

Suddenly, almost overnight, two companies have advanced things to such a degree that you're unlikely to need anything better. If you've been umming and ahing about whether or not to buy a new printer, hesitate no longer. For there's nothing to be gained by waiting for a slightly better or cheaper model. You might be thinking that you'll save a few quid if you wait for another year, and that's undoubtedly true, but just think of all the pleasure you're denying yourself in the meantime. For the sake of another £20, you could be printing the best-looking birthday cards, essays, newsletters, T-shirt iron-ons, transparencies, posters, photos, charts, flyers, letters and magazines this side of a commercial print studio. In any case, with colour printers starting at less than £150, if you can afford the computer to run them on, you can afford a printer.

This quantum leap in printer quality is led by Epson and Canon. At last, the term Photo Quality is more than just over-optimistic sales patter. It's reality, and whatever creative ideas you have, you can bring them to glorious, eye-popping life with the brightest, smoothest, highest resolution pages ever to leave a home printer! You could go out and spend £5,000 on a professional dye sublimation printer, and still not achieve results this good.

Stylus Color 800

The Stylus Color 800 is the first of a new generation of printers whose quality defies belief. It uses a bundle of new Epson technologies to deliver super crisp, super bright images at resolutions of 360 dots per inch (dpi) right up to 1440dpi. It provides stunning photo-realism at a resolution of 1440x720 dpi, and the images are so good that you have to study them very closely before you can even tell they were produced using a printer instead of a dark-room.

It printed our 8x5 inch test image in 5:51 minutes at maximum resolution, while its 360dpi mode produced a very high quality image (better than most of the others at their best resolutions) in only



It's fast, it's colourful, it's technically stunning. Even colour laser printers cower in the presence of the Stylus 800!



The Stylus Colour 800 produces photographic quality output without the photo lab!

1:33 minutes. The Stylus Color 800 produces images using a four-colour CMYK process, which generates exceptionally vivid images. And because the resolution is so high, it's able to reproduce a full 24-bit palette rather than the limited 16-bit palette usually associated with this colour model.

Like many modern ink jet printers, the Stylus Color 800 is designed to print decent images on ordinary copier paper costing fractions of a penny per page, but to get the very best from it you need

Epson's high resolution paper (formerly called 720dpi paper). In addition to its speed and resolution, the Stylus Color 800 is also networkable.

One of the last entrants into the home colour printer market, Epson has quickly come to dominate in terms of quality. Before the dust had settled behind the company's Stylus 500, it

had released a new range, spearheaded by this model. It's difficult to express just how breathtaking and impressive the 800's results are. The Stylus 800 demonstrates just how far affordable printing technology has come.

DEVELOPER	SUPPLIER	CONTACT	PRICE
Epson	Epson	01442 61144	£376 (street price)

The Stylus Colour 800 is a big, beautiful, remarkable milestone of a printer for the discerning power user.



Evolution of a printer

The ultimate objective for a non-impact printer is the best quality, in the fastest time, for the lowest price. Many factors affect quality, ranging from the software drivers to the type of ink used and the method of transferring it to the paper. Micro dry printers use an electrical element to transfer ink from a ribbon on to the paper. They produce a very dense, glossy printout at resolutions up to 1200dpi. However, some banding is usually visible. Basic ink or bubble jet printers use liquid ink that's literally fired at the paper as a tiny heater generates air bubbles within the ink reservoir. This is a very effective method, used by most manufacturers, however, it only produces droplets of a single size, and even they

are of indeterminate shape when they hit the paper. The latest technology, as pioneered by Epson, uses a vibrating crystal to eject the ink from the nozzle on to the paper. Unlike other systems that simply permit the droplet of ink to detach itself from the ink in the nozzle when it's ready, this new system actively disengages the droplet by sucking back the ink in the nozzle. This enables it to create ink droplets of precise shape and size.

Of course, there's no point precisely positioning the ink if the droplets all blend into a muddy mess, and to avoid that most manufacturers have spent a lot of money developing fast-drying inks which produce particularly vivid colours.

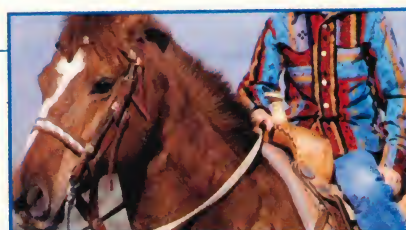


Stylus Color 600



If speed doesn't matter as much as price, the 600 gives you virtually everything else that the 800 does.

The Stylus Color 800's little brother is significantly cheaper, but you give up very little. It's about 25 per cent slower for starters, chugging through our test image in 7 minutes 17 seconds, compared to the 800's time of 5 minutes 51 seconds. This made it the second slowest printer in our round-up, but then its resolution is at least twice as high as the non-Epson printers'. It still outputs at 1440x720dpi but there was a very slight decrease in image quality, with a tiny colour imbalance and faint banding. Yet the Stylus 600 easily produces the second best images. In fact, they're still superior to those of £2,000 dye sub printers.



Not quite the same quality as the Stylus Color 800, but staggering nonetheless.

DEVELOPER	SUPPLIER	CONTACT	PRICE
Epson	Epson	01442 61144	£243.23 (street price)

It's not quite as fast as the 800, but the quality of the 600 is dazzling, and it won't break the bank.

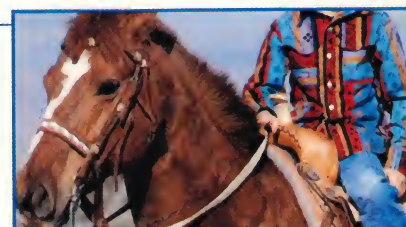


Stylus Color 400

Fortunately, even thrifty shoppers can revel in the benefits of Epson's glorious new printing process, thanks to the Stylus Colour 400.



Just to underscore the fact that the new Stylus range is about more than high printing resolutions, the 400 only produces images at 720dpi. In fact, it's a replacement for the Stylus 500, which is itself barely nine months old. Despite its lower resolution, the 400 easily tops any other printer in its price bracket. This is due to Epson's improved ink delivery system, which produces much more precise positioning on the paper. Given the fact that the printer is designed for people on a budget, it's especially helpful to find that it produces very good plain paper images. Like the 800 and 600, it works well at 360 dpi, and this provides good speed and economical ink usage.



With lower resolution than its more expensive stablemates, the 400 still beats the opposition.

DEVELOPER	SUPPLIER	CONTACT	PRICE
Epson	Epson	01442 61144	£189.18

Epson's new colour printing technology has even improved this, its 720dpi budget model.

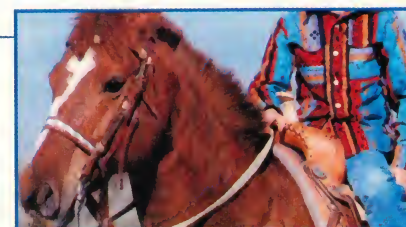


BJC-240



Canon's BJC-240 gives you awesome quality at a ludicrously low price – provided you don't take ink costs into consideration!

Canon has spent a long time in the wilderness, but this printer marks the company's return. The 240 is designed for the budget market, and produces unconvincing yet solid colours and sharp near-laser quality black at a resolution of 360dpi. However, the new Photorealism four-colour ink cartridges produce images almost as magnificent as those from the Epson Stylus 800. But although the cartridges cost the same, but they only do 22.5 pages of A4 graphics (at 15 per cent density). At over £1.30 per page, this is the second costliest photo-real printer around. We also have reservations about the machine's lack of robustness.



The BJC-240 offers fantastic quality, but only if you use its expensive Photorealism inks.

DEVELOPER	SUPPLIER	CONTACT	PRICE
Canon	Canon	0990 143723	£173.90

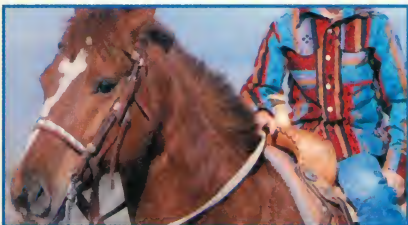
Although it's a cheap printer to buy, the BJC-240 is staggeringly expensive to run. Superb quality, though.





BJC 4550

If you like your images super sharp, with excellent contrast, this might be your best choice. Like the 240, it can use standard colour or Photorealism cartridges, which



Great image quality and A3 print-outs, but the inks are expensive even if the printer isn't.

revealed detail not even visible on the screen. Changing the cartridges isn't particularly time-consuming, but it does make the BJC 4550 just that touch less convenient. However, it has one massive advantage over every other printer in the round-up because it can produce A3 sized print-outs. That makes it perfect for proofing or printing posters.

DEVELOPER	SUPPLIER	CONTACT	PRICE
Canon	Canon	0990 143723	£320.78

The 4550 gives you all the photo-realism of the BJC-240, with the massive bonus of offering A3 printing.



If big is beautiful, then this baby is Miss World! A3 photo quality for under £700. Unheard of.

Alps MD-2010

The only printer in the round-up that's not an ink jet is an exact replica of the Citizen Printiva, but it costs less. It uses micro-dry ribbons which produce a glossy, waterproof print-outs. This is particularly good for transparencies,



Colours are dense and solid, making the Alps especially good for creating transparencies.

thanks to the high-density colour produced. Although it offers 600dpi resolution, it doesn't come with the clever drivers or technology to optimise it, so even though the Printiva was an award-winner a short year ago, it doesn't fare so well now. But the 2010 can print using special metallic foils, which produce a very startling decorative finish. Sadly, running costs are high, especially when you start using foils.

DEVELOPER	SUPPLIER	CONTACT	PRICE
Alps	Rotoc Distribution	01932 571800	£450

The quality isn't as good as some of the competition, but the MD-2010 has many special benefits, such as its ability to print using foil.



If you're into arts and crafts, the flexibility of this printer may be enough to justify its high price and running costs.

Deskjet 400

It's amazing how a printer that yesterday looked impressive can look so weak and frail today. The Deskjet 400 is the cheapest printer in our round-up, though, and its output is good enough for non-commercial purposes. Instead

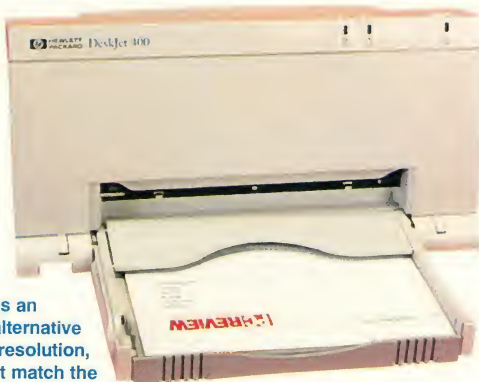


A year ago we'd have said the Deskjet's output was good – now it looks pretty poor.

of constantly improving the printer's resolution (and consequently the time taken to send the image to the printer), HP decided to use something called RET, or resolution enhancement technology. The idea is to interpolate existing 300dpi data into a higher resolution image, but this simply generates a grainy, washed-out looking print, and the software driver doesn't give you the control to do anything about it.

DEVELOPER	SUPPLIER	CONTACT	PRICE
Hewlett Packard	Hewlett Packard	01344 360000	£135.13

What this printer lacks in quality, it certainly makes up for in economy.



HP's RET technology is an interesting alternative to true high resolution, but it doesn't match the new wave of printers.

Jargon box

Banding – An undesirable effect caused by some printers which, in the course of printing, overprint the edge of each vertical row, producing slightly darker strips of ink.

Colour laser printer – Seen by many as the sacred cow of non-commercial colour printing, laser printers produce very precise print-outs. However, the new Epson printers produce higher resolution.

Dithering – A technique for simulating colours by using varying ink pattern densities of primary colours. For instance, a simple checkerboard pattern of red and yellow dots gives the impression of orange.

dpi – Dots Per Inch – The number of individually addressable (and printable) units that a single inch can be divided into by a printer. The vertical number is

often higher because it's a function of the printer's stepper motor, whereas the horizontal figure is derived from the number of print-head nozzles.

Dye sub – A type of printing technology that delivers pixels of absolute colour to the paper, rather than using dithering. It uses RGB colours and is generally the best quality printing available.

Ink jet – The generic term for all printers that use liquid ink to build an image.

Leaching – An undesirable side-effect where ink runs beyond its designated target area on the paper. Can be caused by slow-drying ink, or impermeable or coarse grained paper.

Resolution – The amount of detail that a printer can produce. Usually described in dots per inch, or sometimes lines per inch.



Deskjet 690C

It doesn't give the best picture quality, but the 690C will stand up well to heavy use.



The Deskjet 690 Cxi falls very much in the middle of Hewlett Packard's colour printer range, although its general specifications are similar to the Deskjet 400's. It offers 600dpi printing using resolution enhancement, and this results in an identically grainy appearance. However, because it uses a four-colour process instead of the 400's three-colour CMY system, the colours are a lot stronger, with better contrast. For printing pictures, you can buy an optional photo kit for about £50. Unlike the other printers, it does this by doubling the number of colours used to generate an image, and this in turn produces much subtler colouration, particularly of flesh-tones. Like all Deskjet printers, the 690 is a robust beast, and although it doesn't offer the highest quality, it's well suited to a multi-user environment, such as a classroom or office.



The 690C produces pretty good results, but photo quality requires a £50 upgrade kit.

DEVELOPER	SUPPLIER	CONTACT	PRICE
Hewlett Packard	Hewlett Packard	01344 360000	£224.43

With a photo upgrade kit, the 690 fares quite well, but the other printers do better without the additional expense.



The future

Thanks to the technology in the new Epson and Canon printers, we're approaching the quality ceiling a lot faster than anyone would have believed possible. Canon has demonstrated that quality is not just a factor of resolution, so it seems probable that Epson will further refine its ink delivery and dithering techniques. There's still room for one more resolution jump, but beyond that, the only way left to go is faster, cheaper and smaller. Combined scanner printers like the Printiva 1700 look certain to hold the key to the future, and you can ultimately expect to see models that incorporate fax modems, and possibly phones too.

Is it really worth buying special paper?

Although all of the printers reviewed here are capable of printing on plain copier paper, they each have an array of special papers available for them. Of course, the benefits of T-shirt transfer paper or transparencies are self-evident, but what about the others? You might be wondering whether or not they're worth buying. The simple answer is yes.

In an ideal world, every printer would produce a perfect image on ordinary paper, but the truth of the matter is that regular paper just isn't designed for such high-resolution images. It's relatively grainy and, because it's made from ordinary bleached wood pulp, it isn't very absorbent, which can degrade images through smudging and leaching.

Treated papers are the answer. They're coated in various substances – most commonly

chalk, which has a very fine grain, and is highly absorbent. Such paper also has better optical properties, which means that more ink colour is reflected back to produce a brighter, sharper image.

In addition, most manufacturers now produce high-performance ink, and this ink is optimally designed to work in conjunction with their own brands of paper.

Of course, the world won't end if you use plain paper, and it'll certainly be cheaper than using the special coated products, but it's a shame to buy a magnificent printer, then make it perform like something three years older, just for a few pence worth of paper...

COLOUR LIMITATIONS

Colour printers are not able to produce the full range of colours you can see on your monitor – the colour palette is reduced, as is colour intensity. Most printers use black ink as well as the primary colours to increase contrast and depth.

Brighter inks, smoother and whiter paper, better dithering algorithms and higher resolutions are bringing printed images closer to their original on-screen counterparts.

How they compare

MODEL	DESKJET 400	DESKJET 690 Cxi	BJC-240	BJC-4550	MD-2010	STYLUS color 400	STYLUS color 600	STYLUS color 800
Price	£135.13	£224.43	£173.90	£320.78	£450	£189.19	£243.23	£376
Highest resolution (in Colour)	300x300dpi	600x300dpi	360x360dpi	720x360dpi	600x600dpi	720x720dpi	1440x720dpi	1440x720dpi
Speed (at max resolution)	5min 18sec	7:50	7.11	6:57	6:16	5:16	7:17	5:51
Memory	16K	544K	40K	64K	32K	10K	32K	32K
Colour Cartridge Cost	£41.13	£27.50	£29.37	£47.00	£5.29 per colour	£22.33	£22.33	£22.63
Cartridge life printing (in colour)	150 pages @ 15%	350 pages @ 15%	50 pages @ 15%	50 pages @ 15%	56 pages @ 15%	100 pages @ 15%	100 pages @ 15%	100 pages @ 15%
Cost per Colour page	27.42p @ 15%	7.86p @ 15%	63.44p @ 15%	97.39p @ 15%	36.53p @ 15%	25.59p @ 15%	25.59p @ 15%	24.98p @ 15%
Score	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★★	★★★★★	★★★★★

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Elle 2000 Recipes	30.99
Elle Cookery Cards	40.99
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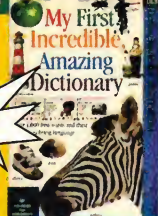
£13.99

Forever Growing Garden	17.99
Garden Companion	31.99
Gardening Multimedia Handbook	9.99
Healthy Cooking	17.99
Herbalist	32.99
Home Improvements	10.99
Instant Recipes	11.99
Interactive Cooking Guide	14.99
Key 3D Design Centre	25.99
Lifestyle of Rich & Famous: Cookbook	8.99
Money Matters	14.99
Nine month miracle	21.99
Perfect Plants	30.99
The Complete Home Suite	25.99
The Healing Foods Cookbook	11.99
The Official Driving Instructor	22.99
Yoga A Multimedia Guide	10.99

MUSIC

A Hard Days Night	32.99
All Music Guide	44.99
Attica Guide to Classical Music	17.99
Beethoven's 5th	13.99
Bob Dylan Highway 61	39.99
David Bowie Jump	29.99
Encyc of Musical Instruments	8.99
Encyc of Sound Vol I/II/III	Each 8.99
Freok Show by The Residents	31.99

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Kid Riffs	23.99
MTV Unplugged	18.99
Music Ace	14.99
Music Works 2	44.99
Music Workshop Vol 2	20.99
Paul Gilbert's Rock Guitar Masterclass	25.99
Prince Interactive	40.99
Professional Music Producer	15.99
Sting	27.99
The Art of Singing	32.99
The Cranberries Door & Windows	21.99
Top Ten Hits Vol 1	26.99

Universe of Music & Graphix	16.99
Viking Opera Guide	37.99
Vivodit: The Four Seasons	20.99
Voodoo Lounge	25.99
Woodstock	22.99

EDUTAINMENT

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Discover how to trash temp files, get better graphics, watch Video CDs and much more with this month's packed round-up.

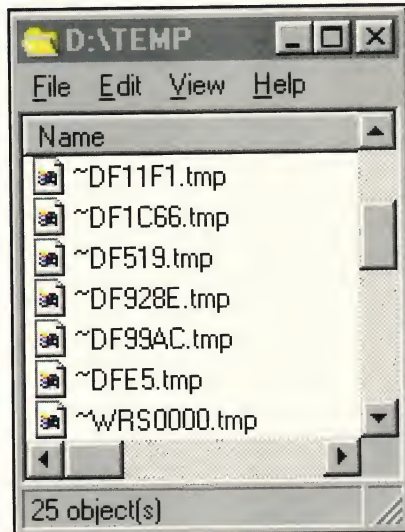
TEMPORARY TROUBLES

Q When using *WordPad* and *Paint* you can select files you have previously saved from the bottom of the File menu. Sometimes there are other items in the files saved list too, such as 'D:\Title 1' in *Paint* which when clicked on says 'Unexpected error while reading Title1' and in *WordPad* 'C:\Windows\Temp\TIsC054'. In both cases I did not save the file in question. How do I get rid of these files and what are the files called 'tes2226', 'win9210.tmp' and 'hp3668.tmp'? Do they cause problems being there and where have they come from?

R J Brown, Poole

A The files you are coming across are temporary files created by various Windows applications. When you edit a document most Windows programs will create a temporary copy of it to avoid damaging the original in the event of a system crash. When you save the file, the temporary version is copied over the real version. Some programs, such as *Microsoft Word*, can be configured to automatically save your work at regular intervals, and the temporary file is also used for this purpose.

Some programs create their temporary files in the \Windows\Temp directory, while others create them in the same directory as the original file which you are editing. The names of the files are usually a weird collection of characters, but this is because the programs make up the names so that they do not clash with any files that might already exist in the temporary directory. Almost all temporary files, however,



Many programs create temporary files, which generally come with a .TMP extension. They can safely be removed if the program that created them is no longer running.

will end in the .TMP extension, so this is how you can track them down.

Most programs delete their temporary files when you close them down. However, if your machine crashes, or you simply turn it off without using the Shutdown command first, the temporary files will not be removed.

Some programs will spot the temporary files when you next start them and attempt to recover the data in them. It's not uncommon, however, to find a scattering of temporary files

in your system. Some programs just don't delete them as they should. It should be safe to delete the files in the Temp directory if there are no programs currently running. How the temporary files ended up in your File menu is a bit of a mystery, but it's not anything to get particularly alarmed about.

UNWANTED UNINSTALLERS

Q Much as I love the Uninstall Shields for Windows 95 that many demos on your cover CDs have, I have come across an annoying problem. I've sometimes removed a demo manually in DOS and then found that they have an entry in the Add/Remove Programs Control Panel. When I run the Uninstall Shield for demos that I have removed in DOS an error occurs. Can I get rid of these useless Uninstall Shields?

Barnaby Gary, Guildford

A One of the great complaints about Windows 3.x was that while the installers for applications were getting increasingly slick and flashy, there was no way to remove programs from your system to free up space or simply get rid of them. The Uninstall Shield system in Windows 95 means that programs should be as easy to uninstall as they are to install. In fact, for a program to be declared Windows 95 compatible it must provide an uninstaller.

This is all very well and good, but the uninstallers still aren't really smart enough. As

INTERNET EXPLORER TROPHIES

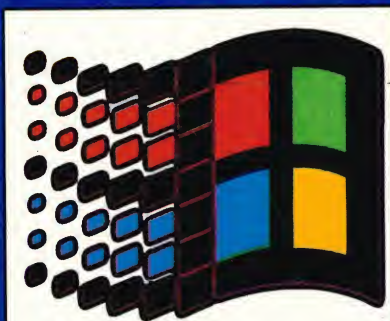
Collect trophies of your exploits on the Internet using your right mouse button. This tip works in Netscape and Microsoft Internet Explorer (which isn't as good, in my opinion). Anyway, basically all you have to do is when you see a picture or link that you fancy making a local copy of on your hard disk, just press the right mouse button over it and a menu will pop up. Pick 'Save Image As' or 'Save Link As' and you'll be able to save the thing you clicked on. If you didn't save a picture you wanted to keep, don't despair. Find the disk cache folder for your browser (called, for example, \Program Files\Netscape\Navigator\Program\Cache\) and have a look for stuff in there.

Thomas Lansard, Birmingham

TIME FOR A CLEAN SLATE



After many months of installing applications, games, demos, utilities and countless other bits of software, you may find your Windows 95 system in a bit of a mess. Some programs stop working, others won't uninstall and there are some things in there that you can't remember ever having put on. There comes a time when the best course of action is simply to bite the bullet and reinstall Windows. If you find yourself having to do this, here are some tips for getting rid of



Sometimes just reinstalling Windows 95 is the best way to cure your problems.

Windows and starting again. Be warned, though. If you're not entirely sure of what you are doing it is possible that you could leave your PC in a bit of a mess, so do tread carefully.

The most important thing you need before you wipe Windows 95 is a boot floppy that allows you to start your computer once you have

removed the system from your hard disk. The boot floppy can boot into a previous version of Windows 95 (this includes the Windows 95 Setup Boot disk). The key point is that the sys-

tem your floppy boots into must be able to access your CD-ROM drive if you want to reinstall Windows 95 from CD. If you're going to install it from floppies, then you won't need your CD drive.

Next, reboot your system and use the [F8] key to start in command-prompt only mode. Copy the DELTREE command from the \Windows\Command directory into the root directory of your C: drive. Move to the root of your C: drive, and delete the Windows directory as follows: deltree windows.

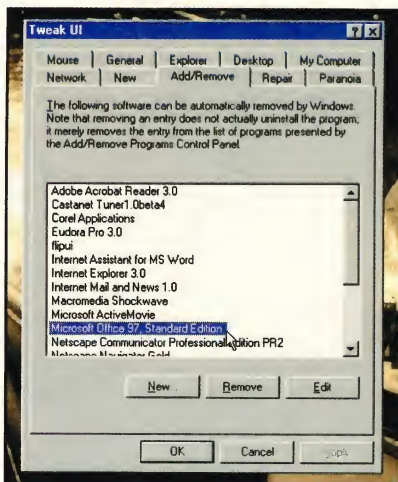
There a few other files you should delete from C:\ so that Windows Setup will think it's installing on a clean system: AUTOEXEC.BAT, CONFIG.SYS, WINBOOT.*, SETUPLOG.*, BOOTLOG.*, DETLOG.*, IO.SYS, MSDOS.SYS, COMMAND.COM.

Having done this you should be able to boot up with your floppy disk and install Windows 95 from scratch.

LOGGED STARTUP

If your Windows 95 system is having trouble starting up properly, you should try using the facility called logged startup. To get this enabled, press [F8] when the message 'Starting Windows 95' appears on your screen. Then pick logged startup from the menu. As Windows loads, it now writes what it is doing into a special file called **BOOTLOG.TXT** on your C: drive. You can then boot using a floppy or go into command prompt only mode to examine the file and see if it can help you work out what's going wrong.

Kevin Smith,
London



Microsoft's TweakUI Control Panel will enable you to modify the Add/Remove Programs list in Windows 95 and get rid of those pesky unwanted uninstallers once and for all.

The Monster 3D features the scorching 3DFX Voodoo chipset, 4MB of EDO RAM and comes with 20 games and demos.



you've discovered, they can't tell when their program has been removed by hand. Also, they sometimes fail to remove an application completely, ending with the message that 'some files could not be removed'. The problem is that they don't tell you which files they couldn't remove, leaving you in a bit of a jam. If you're sure you've removed a program, though, you can delete the entry from the Add/Remove Programs list. The easiest way is to get hold of *TweakUI*, which is one of the PowerToys available from Microsoft's World Wide Web site (you can find it at <http://www.microsoft.com/>). Go to the free Windows 95 software section to download and install the *Tweak UI* Control Panel. Then simply go to the Add/Remove tab, and remove the unwanted entry.

The same effect can be achieved without *TweakUI* if you're willing to fiddle around with the Registry Editor. Open up the REGEDIT.EXE program and go to the following key: HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall. Then remove any unwanted entries under the Uninstall key.

GO FASTER GRAPHICS

I have upgraded my Packard Bell system to a P133 with 16Mb of RAM. It has a Cirrus Logic 4530 or 4535 (64/32-bit) with 1Mb of VRAM. My problem is that I own *F1GP2*, which is too slow on my machine. In SVGA mode with most of the textures turned on I get a frame rate of 16fps (frames per second). Adding the sky textures sends the rate



You can play Video CDs in your PC simply by using a standard MPEG player. Having hardware decompression will help, though.

down to 12fps. If I turn off the textures I can get the frame rate up to 25fps. I am looking at ways to get it to run better, with a budget of around £200. I have been told that a 133MHz processor is the highest speed I can have with my motherboard. I have 256Kb of cache memory which I am told cannot be increased. I have been told to put more RAM in the graphics card, but will this speed the game up? It has also been suggested that I buy a new graphics card. So, with my little P133 and a small budget, how do I become a budding Damon Hill? John Nye, Ramsgate

Putting more video memory into your system will only allow you to use greater colour depths in higher resolutions. It won't improve the graphics performance in a given video mode. As you've already found out, your performance problem is caused by the complexity of the graphics being displayed. Texture mapping imposes a significant performance drain on the processor, and so increasing the processor speed is often a good way to get improved 3D graphics performance.

However, a faster graphics card will also certainly improve matters, especially if it is one supported or recognised by the game you want to run. Last month we tested out eight 3D graphics cards, and the Monster 3D came out on top. This has built up a reputation as being one of the best graphics cards around at the moment, and you should be able to pick one up

MYSTERIES OF MEMORY



As most people in the know will admit, MS-DOS is a bit of a kludge. When it was originally released it was well suited to the IBM PC it was designed to run on (64K of memory and an Intel 8088 processor).

One and a half decades later, however, most of MS-DOS's 'features' simply serve to irritate. A problem many face is that of getting enough free conventional memory to run games, but what is conventional memory? Here's a quick run down of the types of memory you'll find in MS-DOS.

Conventional memory is the first 640K block of RAM in your system. On its own, MS-DOS cannot access memory beyond this 640K limit, and so programs are restricted to working within this area. Keeping as much conventional memory free as possible is the key to DOS memory management.

The next block of memory, between 640K and 1024K, is called **upper memory**. This area is used by your PC's BIOS and video BIOS, and can be used to store device driver software so

that it doesn't use up valuable conventional memory.

The next 64K block is called **high memory** and lies between 1024K and 1088K. It is used to keep track of programs loaded in extended memory, and can also hold part of MS-DOS itself, plus device drivers.

Above high memory comes **extended memory**. This represents the rest of the RAM in your system, up to a limit of 4Gb (imposed by your 32-bit i386, i486 or Pentium processor). The program HIMEM.SYS supplied with MS-DOS enables programs to access the high memory and extended memory areas. Some DOS programs, however, require that

Memory Type	Total	Used	Free
Conventional	640K	36K	604K
Upper	64K	0K	64K
Reserved <XMS>	384K	384K	0K
Extended <XMS>	15,360K	156K	15,204K
Total memory	16,384K	576K	15,808K
Total under 1 MB	640K	36K	604K
Total Expanded <EMS>			16M <16,285,696 bytes>
Free Expanded <EMS>			16M <16,285,696 bytes>
Largest executable program size		604K <618,736 bytes>	
Largest free upper memory block		0K	<0 bytes>
MS-DOS is resident in the high memory area.			

The MEM command in MS-DOS gives you the information you need on how each type of available memory is being used by your PC.

the memory above 1024K is treated instead as **expanded memory**.

The expanded memory specification was created by Lotus, Intel and Microsoft in 1983, and is generally not used directly nowadays. Instead a special program called a **memory manager** makes some of your extended memory appear to be expanded memory. EMM386.SYS, supplied with MS-DOS, is an example of such a memory manager.

for around £150. It will augment the Cirrus Logic graphics chipset in your PC to provide much better 3D processing. With more Windows 95 games supporting Microsoft's DirectX API, you'll find that your games experience will be better than ever.

Q I've bought a few Video CDs recently and tried to run them on my PC. I do not have an MPEG card but instead I've a few video programs, namely *Video for Windows*, *QuickTime* and *Xing* MPEG player. But none of these programs could play my Video CDs. I checked the files on the CDs and couldn't find any common video files such as AVI, MPG or MOV. The only big size files I found were DAT files, each being a few hundred megabytes. How do I run these CDs?
Andy Wan, Northampton

A You'll be pleased to know that the DAT files you can see on your Video CDs are in fact MPEG files. Since you can read the directory on the CD containing the DAT files, the Video CDs you have are of the 'white book' variety, or the more recent Video CD 2.0 format. Either way, you should be able to load the DAT files into an MPEG player (Windows' *Media Player* will do the job) and away you go. The main problem you may have is that your PC is simply not fast enough to decode the MPEG files to give real-time playback. This can be improved by using better software players, or by acquiring some MPEG decoding hardware, which should let you view your Video CDs as they were meant to be seen.

Incidentally, you may be surprised to learn that Windows 3.x is considered by some to be preferable to Windows 95 for MPEG playback. Windows 95 is more resource hungry, and imposes additional overheads which can affect performance. Making use of the latest DirectX libraries with a suitably powerful graphics card will help improve matters, however.

PINK MOTHERBOARD WRAPPING

Q I have recently purchased a new motherboard for my PC. It arrived wrapped in what appears to be pink anti-static packaging material. I have received conflicting information from two different computer shops regarding this packaging. One expert said that this packaging should be installed between the motherboard and the frame of the PC whilst the second expert claimed that this would be a risky proposition as it might cause a short and subsequent damage to the hard drive. I don't know which advice to take!
Loretta Rivett, Lincoln

A The anti-static wrapping around your motherboard is only to protect it in transit. It is not intended to be installed in your PC. The motherboard is generally fitted inside the PC on plastic legs to prevent it coming into contact with the metal case of the PC. You should check inside your PC to see how your existing motherboard is fitted, and follow that example. If there's nothing to support the new motherboard inside your case, then you should take steps to stop it touching the metal.

If you can't find any other solution, then you may be able to use the wrapping as an

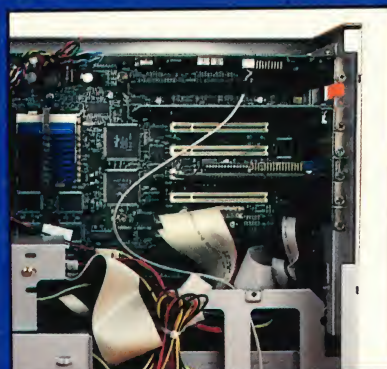
DON'T MISS THE BUS



One of the best features of the PC is the expansion bus. This enables you to add additional hardware to your system by inserting cards in the expansion slots in your system. The bus serves as the communication path between your PC's processor and the expansion cards. Your PC may have some of its key components, such as the video system or sound system, located on an expansion card. Things are never simple in reality, though, and PCs come with a range of different types of expansion bus. To help understand the acronyms, here's a summary of the busses you're likely to encounter today.

The Industry Standard Architecture (ISA) bus, is, as its name suggests, the bog-standard bus architecture you'll find in PCs. It's been around since the dawn of the PC, and can currently be found in a 16-bit incarnation. This means that the CPU and the expansion card send data to each other in 16-bit chunks. The maximum throughput of ISA is around 8Mbits/sec. An extension to ISA, called **EISA**, offers greater performance but has not proved to be as successful. It will accept normal ISA cards, though.

An innovation in PC bus design came with the introduction of architectures called **local bus**. While the ISA bus is nowadays something of a bottleneck in your PC, local busses are



The expansion slots on your PC's motherboard let you plug in extra hardware via a 'bus', of which there are several types.

connected directly into the PC and communicate at the same speed. The first widespread local bus system was called **VESA Local Bus** (or VL-Bus). This is a 32-bit bus, with a peak throughput of 66Mb/sec. VL-Bus was popular for use by video cards.

The latest and greatest local bus system is called **PCI** (Peripheral Component Interconnect). Like VL-Bus, PCI is a 32-bit system, but can transfer data at a rate of up to 132Mb/sec. Modern PCs will probably have some PCI slots in association with some ISA slots. If you're looking to add a new graphics card to your system, PCI is the way to go.

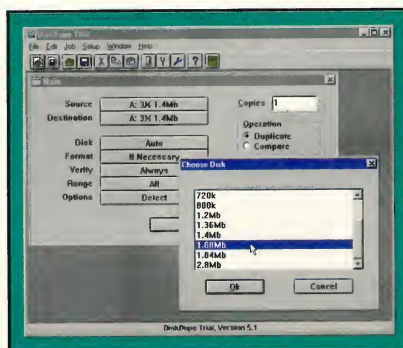
insulation layer, as suggested, but in general this is highly undesirable.

ODD DISK COPYING

Q I've found there are some floppy disk formats that the Windows 95 disk copier can't copy, such as the Windows 95 floppy disks. Is there any way to make copies of these odd formats?
Ron Pugh, Marlowe

A There are a number of 3.5-inch disk formats around, the most common of which these days is, of course, the 1.44MB format high density disks. As you have noticed, though, Microsoft has been using a format which crams 1.68Mb onto a floppy disk. This format is called DMF, and is used for the floppy-based Windows 95 distribution.

There are a number of utilities around which can handle these high-capacity formats. One of the best is the shareware program called *DiskDupe*. It can handle not just the 1.68Mb format, but also 1.84Mb and 2.8Mb formats,



Disk Dupe can duplicate the non-standard 1.68Mb DMF format 3.5-inch HD floppy disks.

should you ever come across those. You can obtain Disk Dupe from the usual online archive sites or shareware libraries - try [ftp://src.doc.ic.ac.uk/packages/simtel-win95/diskutil/](http://src.doc.ic.ac.uk/packages/simtel-win95/diskutil/).

UNINSTALLING SOFTWARE

Q I picked up a copy of PC REVIEW for the first time just before Christmas and found it to be most entertaining. However, I am wondering if you can help me with regard to the free CD. There is quite a lot on it, some of which I will probably keep and other parts which I would like to remove from my hard drive after viewing. I am running MS-DOS 6.22 and Windows 3.11 on a 486 and I have been told that it is not always straightforward to uninstall entire programs as problems may occur. Can you offer me any advice as to what is the best way to perform this removal?
M. McCarthy, Littlehampton

A For Window programs the first thing you should do is check to see if the program was supplied with an uninstaller. This is always the best way to remove an application from your system. Most Windows programs these days come with an uninstaller, but earlier Windows 3.x applications didn't.

In general, though, you will find that most programs are contained within one directory, so you should find out what the directory is and then remove it and all its contents. The installation programs generally tell you which directory the application will be installed in, and so it's worth making a note of this somewhere. Alternatively, find the icon for the application in Program Manager, select it and get its properties by press [Alt] and [Enter].

You will then see then path to the program itself, including which directory it is in. You

SCREEN GRABBING

Did you know that Windows 95 contains an easy way to grab the current contents of your screen so you can use it in other programs? To copy the whole screen to the clipboard, just press the Print Screen key on your keyboard. To copy just the currently active window, press the Alt key and the Print Screen key together. You can then paste the image into an applications.

Susan Ford,
Manchester

EASY ON THE
ICONS

In the November 1996 edition of PC REVIEW you showed how you can change the icons on shortcuts. Through some experimenting with my PC I found that you can make your own icons with Windows 95's PaintBrush program. Draw a simple picture in PaintBrush, about 50 by 50 pixels and save it. Then go to the Shortcut tab on the shortcut's Properties and click the Change button. Click on Browse and then set the File Types box to 'All Files', select your saved file, click Open, then OK and finally OK again in the Properties window. Hey presto, you should have your own icon!

Matty Linfield (12),
Romsey

should then remove the program group associated with the removed application, and check to see if it made any modifications to your AUTOEXEC.BAT or CONFIG.SYS files.

Many applications install files in the WINDOWS directory, or the WINDOWS\SYSTEM directory. It is generally not worth trying to work out which of the files in these directories are no longer needed, unless the documentation supplied with the program tells you. Generally files installed in these directories will not adversely affect your system.

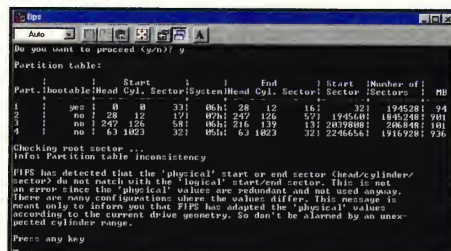
MS-DOS programs are even easier to remove. You can usually just delete their directory, using the DELTREE command and that is all you need to do. You should again check the AUTOEXEC.BAT and CONFIG.SYS files, to see if the program's installer modified these. Sometimes you will find comments in the files pointing out which lines were added by which program. Delete the lines associated with the program you have removed.

PARTITION MAGIC

Q I have a 1Gb hard disk in my PC and I currently have Windows 95 installed on it. I've decided that I would like to install the Linux UNIX system on my PC, so I will have to partition my disk, with one partition for Windows and one for Linux. What I would like to know is whether I can repartition my hard disk without having to lose all the data currently on it. If the worst comes to the worst, I would be able to reinstall Windows 95, but I'd prefer to avoid this.

Martin Laity,
Northampton

A There's a useful public domain utility called FIPS which enables you to



FIPS in action, repartitioning a hard disk. This can save a lot of time if you decide to install a second operating system.

repartition a disk without losing data. Normally, when you repartition a disk you have to format each of the new partitions. FIPS, however, will allow you to split a partition in two – but only under certain conditions.

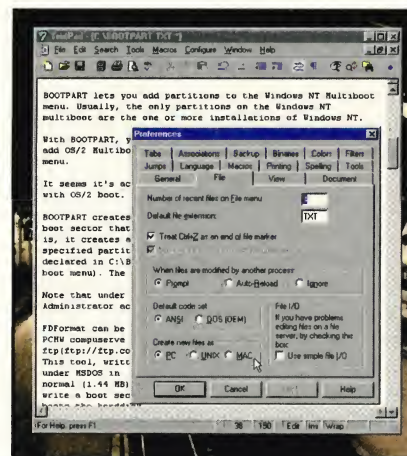
Principally, all the data on the disk to be partitioned must be located at the bottom of the disk. In other words, the maximum size of the new partition is governed by the amount of contiguous free space at the top end of the disk – it's no use having lots of space broken down into two or more separate areas.

This makes sense if you understand how disk partitioning works. Each partition has a start and end point on the disk. The space in between each start and end point makes up the partition. The beginning of the disk has a special area called the partition table which contains details of the start and end points of each partition on the disk.

The DOS/Windows partitioning program, FDISK, is pretty unintelligent and simply rewrites the partition table without taking any notice of the current contents of the disk. FIPS, however, is designed to preserve the contents of the current disk, and to do so it checks that there is no data stored above the point at which the new partition is to start.

To move all your data to the start of the disk you simply need to run a disk defragmentation program, such as the one supplied with Windows 95. This has the effect of moving files

so that all their blocks are together at the bottom of the disk, leaving the top end empty. FIPS can then safely modify the partition table, leaving your old data intact. You should read the FIPS documentation carefully before using it. You can get FIPS from



When it comes to straightforward text editing, without the fancy frills of WordPad or Microsoft Word, TextPad is the business.

the usual online archives – try [ftp://src.doc.ic.ac.uk/packages/simtel-dos/diskutil/](http://src.doc.ic.ac.uk/packages/simtel-dos/diskutil/).

NOTEPAD SUCKS

Q As a text editor, I think Notepad sucks. And WordPad is a bit too much like Microsoft Word for my liking. I'm looking for a decent programmers' text editor for Windows 95. Any suggestions?

Tom Rider, London

A You could do a lot worse than check out TextPad for Windows 95. It's a shareware text editor, and is available for download from <http://www.textpad.com/>.

TextPad for Windows 95 has a range of excellent features, and is more inclined towards raw text editing than the fancy formatting offered by WordPad. It supports full search and replace, indentation, macros and is highly customisable.

What's more, it will save text files in Mac, PC or UNIX formats and has a spelling checker for which you can download dictionaries in several languages.

KNOW YOUR PROTOCOLS



Computer communications comes down to a matter of protocols. When one computer wants to talk to another over a network (such as the Internet) they have to be talking a common language, and in addition they have to say the right things at the right time, which is where the protocol comes in. Using the telephone is an example of a human protocol. People generally accept that when you answer the phone you say 'hello'. If you deviate from the protocol and answer the phone with 'goodbye' you'll probably cause confusion.

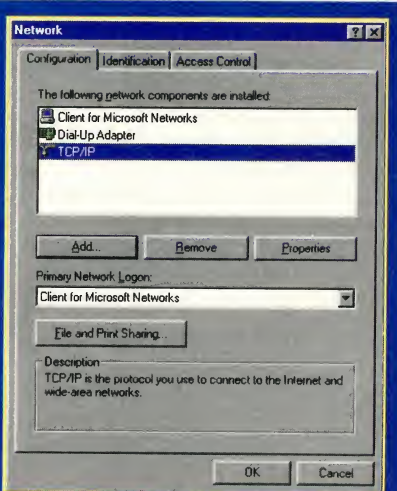
At a low level all communications on the Internet use a protocol called TCP/IP (this stands for Transmission Control Protocol/Internet Protocol). If you use the Dial-up Networking in Windows 95 to access the Internet, have a look in your Network Control Panel. You'll see that TCP/IP will be one of your installed protocols. Built on top of TCP/IP are other protocols used for communication. You'll have seen these as the first part of the

URLs (Uniform Resource Locators) you use in your Web browser. Two of the most important are HTTP and FTP.

HTTP (HyperText Transfer Protocol) is the protocol used to send web pages from Web servers to your PC. It can accommodate text, images, sound, video and many other media types. Your web browser talks to the Web server using HTTP.

FTP (File Transfer Protocol) is an older protocol specifically designed for transferring complete files from one computer to another. When you download software from a Web site you are probably using FTP to do so (it is generally more efficient than HTTP) – check the URLs to see if they start with 'ftp://' rather than 'http://'. Your Web browser can serve as an FTP client, allowing you to navigate the directory structure of the FTP server rather like Windows' Explorer.

Some Internet sites allow you to access them with either HTTP or FTP. For example, the massive SunSITE archive in London is available using either of these URLs:



The TCP/IP protocol is the foundation of communications on the Internet.

<http://src.doc.ic.ac.uk/> or [ftp://src.doc.ic.ac.uk/](http://src.doc.ic.ac.uk/). If you know exactly what file you're after, FTP saves you wading through pages of graphics and text.

How to...

MAKE YOUR OWN MULTIMEDIA



Here's the second instalment of our three-part tutorial, which shows you how indie band 37 produced an interactive single of their song, Into the Sun. Now we get down to the music...

AND HERE'S ONE WE MADE EARLIER...

If you missed last month's edition don't worry, we've included it on the disc – you'll find it in the Multimedia section of our menu, along with Medi8or Entrée 3.0, the authoring software you're going to be using. For this tutorial make sure your Desktop screen size is 800x600. Then if you work through the 'Make your own Multimedia' presentation you'll be all set for this month's instalment. Or you could just cheat and load up the SUN.MD8 file you'll find in the 37 directory on our disc. However, you'll learn more about Medi8or by doing it the hard way and following the tutorial.



Welcome back. Last month we started your interactive single by creating the opening screen and linking it to a blank second page. Now you've got a feel for Medi8or we're going to be expanding your knowledge even further. We thought it would look really professional if the hotspots in your presentation were highlighted when the cursor moved over them. With Medi8or that's no problem. When the cursor moves over a hotspot, we're going to display a 'hidden' picture, then

when the cursor moves away the picture will disappear again. 'Hidden' pictures are represented in development mode by an outline box, but are invisible to the user at run time. The hidden picture in this case will contain the same word as the existing hotspot, but will be red instead of blue. To the user it will look like the hotspot turns red whenever the user moves their cursor over it, producing a highlight effect.

The key to adding these highlight effects lies in the 'Events' menu. Using the 'Events'

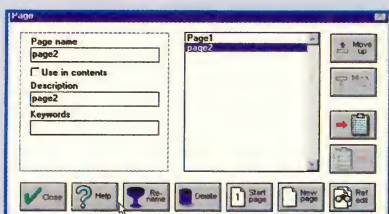
menu you can detect when the cursor has moved over a graphic, and perform an action (such as making a hidden picture visible).

You'll find all the graphic and sound files you need in the 37 directory on the disc. As well as adding the highlight effect this month you'll be adding sound files from the band. Well, that's the theory, here's the practice.



Come on feel the noise...

- 1** Make sure you're looking at the second page of your document. Choose Select Page from the Page option on your menu bar, or press [F8]. Click on Page 2, then click Close.



- 2** First we're going to add the background to page two. Select the Picture tool from the ToolBox and draw a box on the screen. A dialogue box will pop up. Click File and select the file BACK2.BMP. Make sure the Keep Size box is ticked. Click OK and adjust the size of the background until the co-ordinates read x:92, y:83, b:820, h:617.

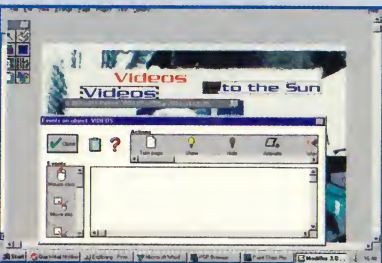


- 3** Now we're going to add the graphics for the hotspots, which will link you to the other sections of the document. Use the Picture tool again (like you did in step two) to create five picture boxes, one for each of the graphics VIDEOS.BMP, SUN.BMP,

LYRICS.BMP, QUIT.BMP and lastly THEBAND.BMP. You need to make sure Keep Size is ticked for all of them, but none need 'Transparent' enabled. Place the band's logo (LOGO.BMP) in the centre of the screen. Remember to make the yellow background transparent, like we did last month. Also, don't check the Keep Size box, so you can resize it to make it fit nicely into the middle of the screen. Arrange the pictures on screen so that they look roughly like this:



- 4** Now the screen has taken shape we're going to add hotspot highlights. We're going to add a highlight to the Videos hotspot first. So load in the VIDEOH.BMP picture into a picture box anywhere on the screen, making sure Keep Size is ticked. A red Videos picture will appear on your document. Don't place it over the blue video hotspot just yet. You'll see a dialog like this one when you right-click on the blue Videos hotspot

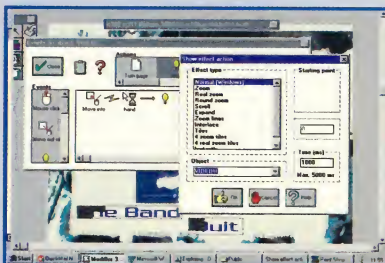


and select the Events menu from the pop-up menu.

- 5** Using this dialogue box we're going to add actions resulting from the Move Into event. The Move Into event is activated every time the mouse cursor moves over the selected object, which in this case is the hotspot Videos. Drag the Move Into event from the left hand Events list into the white area. We'd like the cursor to change to a hand, rather than the normal arrow when the mouse cursor is over the hotspot. To do this, drag the Cursor event from the Actions list down into the white area, adjacent to the Move Into icon. You'll be asked to enter a Cursor File. Choose C:\MEDI8OR\HAND.CUR and click OK.



- 6** Next we'll make the highlight graphic visible. Select Show from the Actions list and drag it into the white area, just after



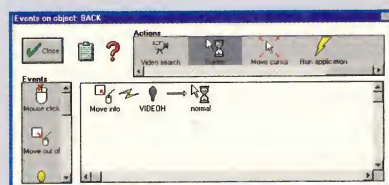


the Cursor action. The Show action makes an object visible to the user. You'll be asked which object you want to show. Using the Objects pull-down menu select the VIDEOH file. Now we've told Medi8or to make the red highlight visible and change the cursor when you move over the blue Videos hotspot.

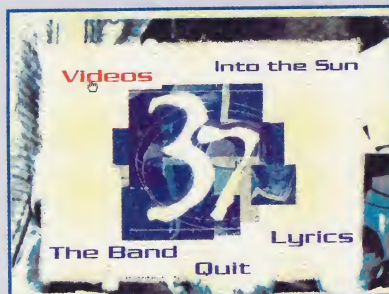
7 The next step is to make the highlight invisible to the user to start with, and position it correctly over the hotspot. Click Close on the Events pop-up dialogue box and you'll be returned to page two. Right-click on the red Video picture. Select Arrange from the pop-up menu and turn off Show. You'll notice the picture becomes just an outline. Finally, move it over the blue Videos hotspot. Run the page by pressing [F6]. You'll notice that when you move the cursor over the Videos hotspot the red video highlight is displayed, and the cursor changes to a hand. You may need to adjust the position of the highlight using the cursor keys for it to appear in the right place. Press [Esc] to return to development mode.



8 Unfortunately our highlight isn't much use at the moment since it stays on all the time once activated. The next step is to make the cursor change back into an arrow, and hide the highlight when you move off the hotspot. To do this, right-click on the background image and select Events from the pop-up menu. Choose the Move Into event and the Hide action. Select the object VIDEOH. Click OK. Drag the Cursor action adjacent to the Hide action and select C:\MEDI8OR\NORMAL.CUR. The pop-up 'Events' box should look like this:



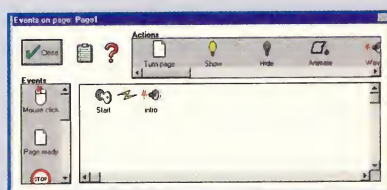
9 Test the document with [F6]. You'll notice that when you move off the hotspot and on to the background image the highlight will disappear. However, it's possible that the user might move off the



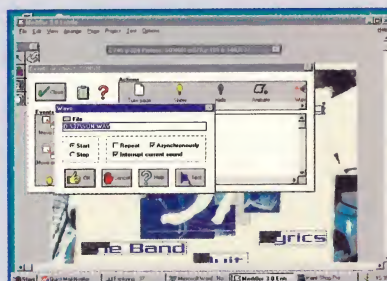
Videos hotspot straight onto the logo, rather than the background image, so you need to add the same events to the logo. Click on the 37 logo to select it, then right click and select Events. Add exactly the same events as in step 8. Test the page by pressing [F6] again and you'll find the hotspot now highlights perfectly.

10 You're going to have to add highlights for all the other hotspots on the page using the method described in steps 5 - 9. This is quite a big job, but you'll learn a lot by doing it. If you want to cheat just load up the SUN1.MD8 file to see one we've prepared earlier.

11 Time to add some sounds. First we want to add a track to the introduction page. Go back to page one and select Events from the Page menu. Next drag Start from the Events list and Wave from the Actions list into the white area. You'll be prompted for a .WAV file. Load in the rocking intro track from 37 called INTRO.WAV. The boxes Asynchronously and Interrupt Current Sound should be ticked, while Repeat should not be ticked. If Asynchronously was not ticked Medi8or would wait until the sound had been played all the way through before continuing. If we'd ticked Repeat it would loop the track. Click OK and you've added your first sound. It's as easy as that.

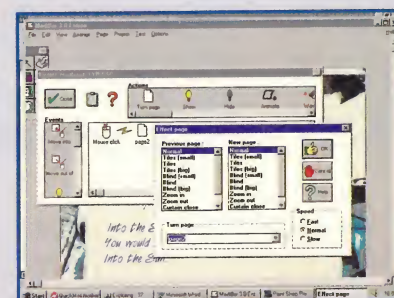


12 Now we're going to add the main track - Into the Sun. We want this to play when you click on the Into the Sun hotspot on page two. Go to the second

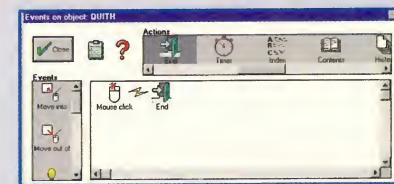


page and right-click on the Into the Sun hotspot and select Events. Add the event Mouse Click and the action Wave. When prompted for a WAV file choose the file SUN.WAV.

13 OK, we've added the main song to the presentation. Check it out by pressing [F6]. You'll now be getting a feeling of how great multimedia can be, and how easy it is to create it using Medi8or. It's time to add the Lyrics screen. Create a new page from the Page menu. Choose Select Page, then click on New Page. Call the page Lyrics. Go to the page and load in the picture LYRICSPBMP with the co-ordinates x:92, y:83, b:820, h:617 so that it lines up with the previous page. You may need to fine-tune its position using the cursor keys. Right-click on the picture and choose Events from the pop-up menu. Choose Mouse Click as the event and Turn Page as the action. Choose Page 2 as the page you're turning to.



14 We'll just add a few more bits. To finish off this month we'll make the Lyrics hotspot jump to the lyrics page and the Quit hotspot end the presentation. Go back to page two and add the event Mouse Click and the action Turn Page to the Lyrics hotspot. Add the event Mouse Click and the action End to the Events of the Quit hotspot.



That's more than enough to be getting on with this month. You've added some fantastic highlight effects to the hotspots and some great sound tracks. Next month we delve into the world of video. See you then.



CONTACT 37
Our tutorial features the 'soon to be famous' band 37 from Bath and their song Into the Sun. They've played lots of gigs around the country and are currently working hard to get a recording contract. To contact them email gbarlow@futurenet.co.uk for more details or visit <http://www.col-snell.demon.co.uk/37/>



NEXT ISSUE

You'll be adding video clips of the boys playing their song, and being interviewed. You'll also be turning your presentation into a stand-alone application.

CD REVIEW

On the disc is a working version of Medi8or Entrée 3.0 and some clipart from Matchware. All the files you'll need for this month's tutorial are in the 37 directory.

For more prices find us on the internet at - <http://www.atozmusic.co.uk> or phone for a catalogue

How to...

TURN YOUR PC INTO AN MMX MONSTER

Giving your PC a silicon implant is easier than you probably think and the results can be staggering. Here's our quick and easy guide to installing an MMX Pentium OverDrive...

CAN I UPGRADE?

Currently, you can only move up to an MMX OverDrive if you have a 100, 90 or 75MHz Pentium. These will upgrade to 166, 150 and 125MHz MMX Pentiums respectively. A small percentage of motherboards, however, cannot accommodate the MMX OverDrive. There's a list of motherboards that are compatible in the SYSLIST.DOC file on CD REVIEW.

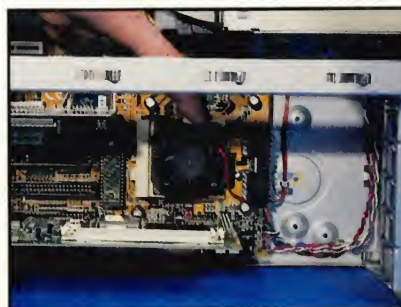


1 Before you start, you should run the diagnostics program on the diskette provided by Intel with your Pentium OverDrive chip. This will take a quick look at your BIOS to make sure your system can accommodate an MMX OverDrive chip. Following the test a message should come up reading: Your System successfully completed the BIOS diagnostic test. If you wish, you may now do an array of mathematical tests on your existing Pentium Processor. If at any point the program offers to install a VMCPD.VBX file click OK. This will update Windows 95 for MMX functionality.

2 Prior to giving your PC any sort of silicon enhancement, you'll have to undress it, so to speak. Yes, we're getting down to the daunting business of opening up your machine and messing about under

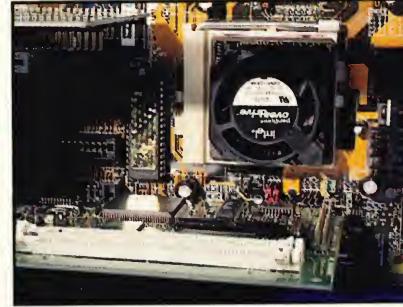


the hood. First, ground yourself by touching a large metal object. The casing of your PC will do. Then remove the screws holding the top of the casing to the base of the box. Now the case should come away if you slide it back an inch or so then lift it up. Ground yourself again before touching any of your PC's internal components.



3 Time to remove your old processor like some malignant tumour in the belly of your PC. First you must locate it. Most likely your existing processor will be on the left-hand side of the motherboard if you're looking at the PC from the front. It will have either a heat sink (big aluminium thing) or a fan on top for cooling, and will be held in place by a ZIF (zero insertion force) socket. Carefully lift the ZIF lever and it will relinquish its grip on your processor. Now remove the chip. (See the Wired fans box if you have a chip with a fan.)

4 The next step is delightfully easy. Make sure none of the pins on the bottom of the chip is bent, then locate the corner of your OverDrive processor that appears to be missing a pin. Then find the corner of the socket on the motherboard which is also missing a pin. Lower the chip



carefully into place – it will only go in one way – and don't push it. When it's in, you can pull the ZIF socket lever back to its normal position. Don't worry about putting the fan or heat sink from your old chip on to the new one – your OverDrive has its own fan.



5 Surgery is over and it's time to close the wounds and put the casing back on your machine. When you've done this and put it all back together, power up once again. Windows 95 should boot up without difficulty. Once again you must now run the diagnostic program on the Intel floppy. This will tell you that you have an MMX OverDrive chip installed as well as a 32Kb internal cache, MMX Technology and Enhanced Branch Prediction. You'll also be able to do mathematical tests and check your MMX's video performance.

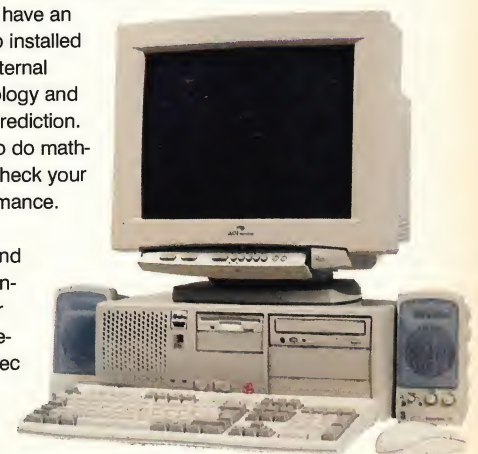
6 You're done and your MMX monster is now ready for gaming and multimedia action. Our Mertec P100 has been transformed into a P166 MMX.

OUR TEST PC

The PC we've used in this upgrade is a Mertec P100 with 32Mb RAM, an eight-speed CD-ROM drive, 1.6Gb hard disk, 3D Xpression graphics card, 17-inch ADi monitor and a whole heap of software gubbins. It was good before – and pretty nifty with games like MDK, Quake and Red Alert. Now that it's a supercharged MMX, it's just great. You can contact Mertec about its custom built PCs on 01792 772111.

Wired fans

If your old chip has a fan that's wired to your power source, you're going to have to unplug it. Chances are it's attached – via a splice lead – to one of the other components in your PC such as your hard disk. Unplug the lead that goes back to the power source from the splice section, then unplug the splice section (you'll see that two leads go from one of the plastic plugs to the chip, while another four go back to a plug which attaches to the main leads back to your power source) from the component. Finally, with the whole splice section of wiring plus the chip removed, plug the lead that comes from the power source directly into the component's power socket (ie. your hard drive or whatever).



How to...

MASTER SIMPLY 3D 2

Simply 3D has just become a whole lot simpler. When you've finished tinkering with Simply 3D, free on our cover CD, and the free book with this issue, have a go with Simply 3D 2 – it's great.

In the last few years 3D packages have advanced in leaps and bounds, becoming cheaper, more accessible and easier to use. Gone are the bad old days of DOS, when a decent rendering package cost as much as a small car. Instead, we have full Windows compatibility, with windows within windows, tool tips, wizards and on-line help.

There used to be two main types of 3D package – those that hardly anyone could afford, and the free ones like *POVRAY* which, while excellent in their own right, just about required a degree in mathematics to use. However, newer packages like *Truespace* and *Simply 3D* were the start of a new era in 3D design.

The ultra-friendly *Simply 3D 2* has advanced on these changes and follows in the footsteps as such giants as Autodesk's *3D Studio MAX*, by combining the

functionality of the Windows environment with ease of use, without compromising results. In fact, *Simply 3D 2* is as easy as drag and drop, and that's exactly what it does best.

If you want to use a pre-rendered shape all you have to do is select it from the lower window in the program, and drag it on to the workspace. In the same manner, cameras, lights and materials can be plonked down where you need them, then repositioned at will. If you want your object to have a specific texture, select the object, select the texture and drop it on.

As an additional bonus, if you have a 3D card, *Simply 3D 2* supports Direct 3D and Open GL. But you'll see for yourself just how easy and powerful this program is as you follow this tutorial on mastering *Simply 3D 2*...

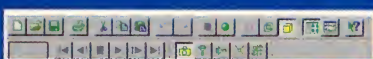
PROJECT WINDOW

The Project Window is where you will be spending most of your time in *Simply 3D 2* as this is where you create and modify the objects that make up your scene. The main window you are presented with is the default camera view, where you will see a colour representation of your object. This view can be changed to the standard four-view configuration, though – camera, top, front and left. It's important to get to grips with these different views at an early stage because when you're working in 3D space you need to switch from window to window instinctively to accurately position the objects in your 3D scene – remember, you're manipulating 3D objects with width, height and depth via a 2D display.



TOOL BARS

The Tool Bars are where you go to make modifications to your project. All the basic tools are included here – including scale, move, rotate, select, shapes and text. With these you can create a basic shape then craft it to your desired objective. The top tool bar is where you can change the view, undo, redo, render and also holds the animation controls.



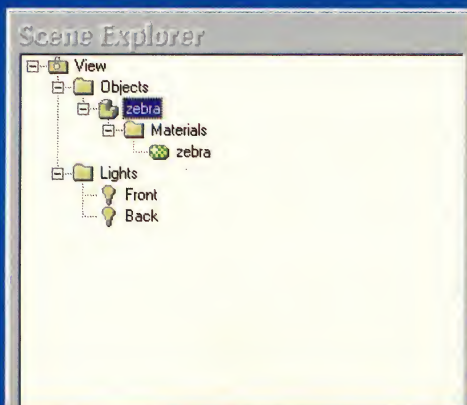
3D CATALOGUE

The 3D Catalogue is where things start to get interesting. From here you can select a number of pre-rendered objects, materials and lights and a set of pre-defined animation types. These all operate on a drag and drop basis, so you can select an object, then select a texture and drop it onto the object. If you are not sure about how to position your light sources, a number of pre-defined sources are available – again, you just drag and drop them on to the construction window. Finally, if you want to animate your scene, select animation type and move it over.

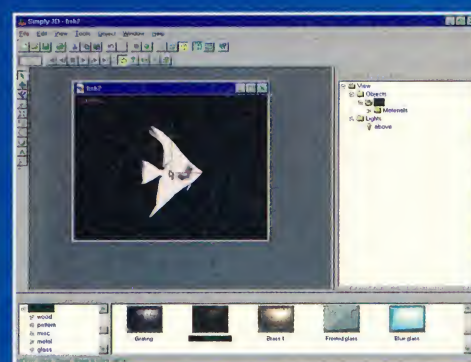


SCENE EXPLORER

The last main window is the Scene Explorer. This is laid out in the same branching tree manner that File Manager and Explorer use, showing at a glance what is contained in the scene. Each object has its own tree showing what textures are attached, or what other objects are associated with it. From here objects can be renamed, grouped or moved, making things very simple indeed.



HOW TO MAKE A FISH IN A TANK



1 Start *Simply 3D 2* and select Create a new scene from the project wizard. You will see a black window with the title Untitled one which is the default camera view and where you will create your scene. Go down to the 3D catalogue and select the fish shape, click on it and drag it across to the camera view and drop it. The fish will now appear in the window and will be selected, so rotate it through 180 degrees. Go down to the 3D catalogue and select the Gold material and drag it on to the fish.



2 Next we need a floor to our tank, so go to the shapes tool and select the floor tool. This will need to be scaled up, so use the scale tool to



What's it all about then?

The *Simply 3D* screen is split up into four main areas; the Project Window where you design and render your project, the Tool Bars at the top and left, where you select your shapes and tools, the Scene Explorer on the right where you can tell at a glance what is contained in your project and finally the 3D Catalogue at the bottom, from where you can import objects, lights and textures.

SEE WHAT IT CAN DO...

Check out the *Micrografx* Web site and see some of the animations produced using *Simply 3D 2* at <http://www.micrografx.com/webtricity/animations/anim.asp>



The Pick tool is used for selecting objects in the different windows and is the tool to use when dragging and dropping.

The Move tool is used to move the selected object. The default is free move, but if you click on the small arrow, you can constrain it to move in one plane only.

The Rotate tool enables you to rotate objects. As with Move the default is free rotate, but by using the arrow, you can choose to rotate in a specific direction.

The Scale tool is used for resizing objects. By default it will resize in all directions but, again, by clicking on the arrow you can choose different scale options.

The Centre Objects tool will move the selected object to the centre of the scene.

Reset Objects will undo any changes made to the selected object.

Aim. Positions the target of a selected light or camera – to aim it, in effect.

The Shapes tool enables you to create a number of default shapes.

The Text tool is used to create text for your scenes, and has two extra options – Text Editor and Text Wizard.

The Magnify tool is used to zoom in on an area of a scene with an Auto Zoom or Smart Zoom option.

JARGON BUSTER

Bevelling – giving an angled edge to an object. It's sometimes used to give a more pronounced 3D effect and is usually applied to text.

Rendering – choosing a viewpoint in a 3D scene and turning it into a high-quality 2D image.

Gouraud shading – A form of rendering which uses a mathematical algorithm to give smooth shading of angled surfaces.

Phong shading – an improvement over Gouraud shading, using raytracing techniques and the shininess attributed to surfaces.

Raytracing – a form of rendering which calculates the scene's shading and colour by tracing the paths of the rays of light from light sources.

Keyframe – in an animation a keyframe is a frame where an object's properties change, for instance, speed, direction, size etc.

Tween – or *betweening* – the process where the frames in between keyframes are worked out.

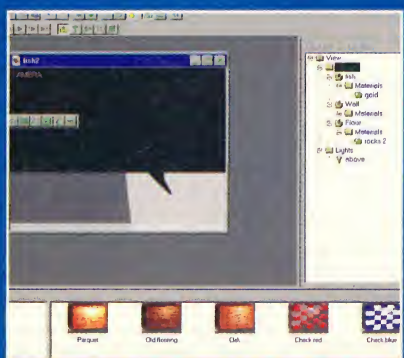
Spline – a curve or line where the shape is defined by a series of adjustable points.

Texture mapping – applying a texture or material to an object. Some packages enable you to change the size of the map so the pattern is repeated at larger or smaller intervals.

increase the size of the floor until you can't see the edges in the camera view. Select the rock texture from the catalogue and drop it onto the floor. Move the floor down so appears to be several inches below the fish and drag it forward so that the back edge is only a few inches behind the fish.



3 Now we need a back wall to our tank, so go to the Shapes menu and select the Wall tool. The wall will be in the middle of the scene and probably too small, so we need to scale it up and move it. First move the wall back, so that it appears to be a few inches behind the fish, increase its size so you can't see the edges, then using the four-view windows, move the wall up so that the floor and the wall just touch. Select the blue glass material and drop it on to the floor.



4 To add an extra dimension to the scene we want to include some other elements. Go to the Shapes menu and select the sphere. This will plonk a large sphere in the middle of the scene – which is not where we want it. Make sure you select the sphere using the pick tool, then move it off to the left. Once it's out of the way, use the scale tool to reduce the sphere's size – it should be small enough to be a bubble coming from the fish's mouth. Use the four-view windows to position the sphere in front of the fish and place the frosted glass texture on it.



5 Now we have a bubble – but we want more than one. Select the sphere, by either clicking on it, or by selecting it in the Scene Explorer. Copy the sphere by pressing [Ctrl] + [C] and then paste it by pressing [Ctrl] + [V]. Now you won't be able to see the new sphere because it has been pasted over the first one, but it is automatically selected, so just click on what appears to be your original sphere and drag it up. Now you have two bubbles, but you want the second one to be slightly bigger, so use the scale tool to increase its size.

6 To finish off, copy the second bubble and again paste it to create a third one. Move the third bubble up and increase its size. We now have a goldfish in a tank blowing bubbles. Use the green render button to render your scene, and decide if you want to make any changes. At this point you might want to rename some of the elements in the Scene Explorer to make more sense. Well done – you've created your first scene.



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CD REVIEW

TOMB RAIDER DEMO PART 2 THE CITY OF VILCABAMA



Lara's twin pistols come in pretty handy against the many evil beasts she has to face in our new Tomb Raider demo.

What's this all about then? As you know we ran a *Tomb Raider* demo way back in our Christmas issue, so you're probably wondering why we're running another demo, even though it's such an excellent game.

Well, actually this is a new demo which takes off exactly where the first one ended. It's always nice to meet old friends again, and that's just how we felt when we played

this latest version. It reminds you just what a great game *Tomb Raider* is, and how it fully-deserved it was of the 10 out of 10 mark we awarded it.

The exploits of Lara Croft, the game's heroine, have been catalogued extensively throughout the pages of gaming history; but it's just possible there are some people out there who haven't met her yet. For those unlucky souls here's a quick resumé: Lara is a girl on a mission and finding treasure is her goal – and yours. The object of *Tomb Raider* is to guide Lara around each mysterious location finding all the gems and gold you can while outwitting the various beasts blocking her path.

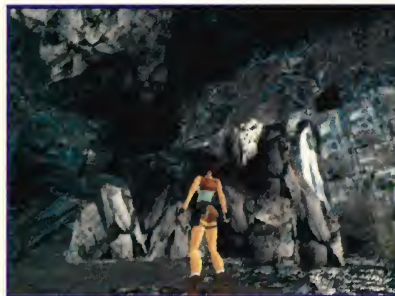
Right from the beginning of the demo you'll have to fight your way past a nasty pack of wolves. Before you can shoot them you have to press [Space] to draw your weapons. Once she's packing her guns, press [Ctrl] to fire. You should overcome them with ease, but keep one eye on Lara's health bar. After despatching the enemy,

press [Space] again to put her guns away. This leaves her hands free to grab ledges and open doors.

Now head into the city and, after navigating a twisty tunnel you'll come to a pool of water. If you fall in then use the [Alt] key to swim and the [Ctrl] to jump out. Look to the left of the pool and you'll see a set of stairs – follow them into the city. (GB)



Not surprisingly, the motor cycle is Lara's preferred mode of transport.



Even Lara stops to marvel at the wonderful 3D graphics in our fully playable *Tomb Raider* demo – don't miss it.

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From: EIDOS ☎ 0181 780 2222 • Min System: 486DX2/66, 8Mb RAM, 5Mb hard disk space, Windows 95 or DOS

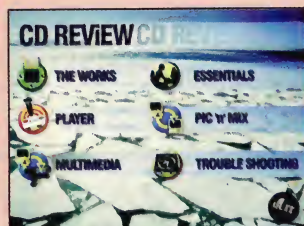
Getting started

Spring is in the air. The evenings are drawing out, the trees are budding and the local water authority is just about to implement a hosepipe ban. What's more, the ice on the CD REVIEW interface is starting to crack – is it because the contents are so hot?

Featuring two separate menus for Windows and DOS, it aims to be all things to all PC users. Before you run our menu, it's a good idea to quit from any other programs that are already running. Here's how to get the menu you want up and running:

Windows users

If you're using Windows 95 then pop the CD in the drive, wait a few seconds and the Windows 95 menu autoruns. This feature is



Beneath that icy surface lies a simmering volcano of software.

not supported on all machines, so if nothing happens click on Start, then select Run. Use the Browse option to locate the file REVIEW.EXE, and you're into the action.

If you're running Windows 3.1, click on File, then Run, then use the browse option to select the file REVIEW.EXE. Double-click the file name to start the menu.

Our Windows menu is split into five sections, the contents of which are described in more detail on the following pages. To get to a section, click on its icon on the main screen and use the arrow keys to get to demos.

You'll notice that we've also included the Troubleshooters guide on the front end – it should help you sort any problems out.

DOS Menu

Even in these enlightened times, many games require DOS to run, so you'll find most of this month's in our DOS menu. Type PCR or GO at the DOS prompt of your CD-ROM drive. Once the DOS menu is up and running use the arrow icons to scroll through our demo selection.

SPACE BAR

In *Space Bar* you play Alias Node, a human cop on Armpit VI, a dismal backwater mining planet. After 15 uneventful years on the force, though, you've received your first big break. There has been a break-in at Corporate HQ and some important industrial secrets have been stolen. The thief is hiding out in a spaceport dive called The Thirsty Tentacle. He could be any one of the dozens of seedy characters in the bar, and it's up to you to find him.

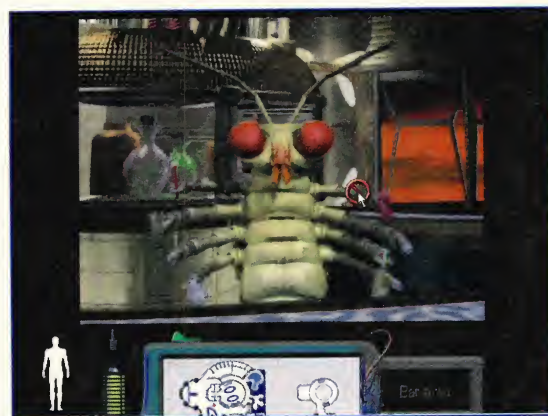
Luckily you are trained in an interrogation technique called Empathy Telepathy. If you talk to a suspect long enough, and engage him/her/it on an emotional level, you can enter that character's thoughts and relive a memory through that character's eyes.

Our demo contains one of these flashbacks. When you've gained entry to the bar just talk to the many-legged bar tender long enough and you'll soon be seeing life from a very different perspective. Each of these 'emp-tel' flashbacks is like a small adventure game with its own problems to solve and characters to meet. When you complete each of these flashbacks, you will learn a clue that will help you solve the mystery back in the bar.

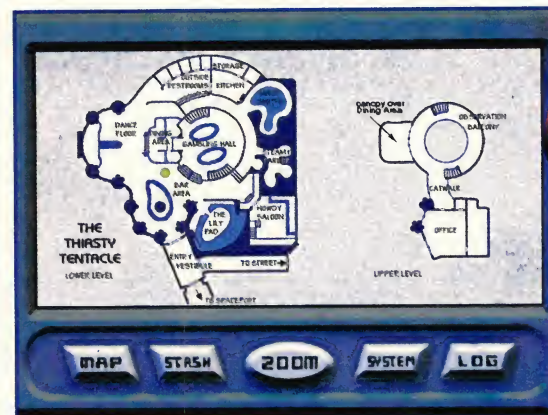


Click on the Tricorder-like control panel at the bottom of the screen to take a close look at what you're carrying.

To quit playing the demo, press the [Alt] and [Q] keys at the same time.



Meet the Bet Lynch of the future. Two pints of mild please, love, but we'll skip the packet of scratchings tonight, thanks.



Here's the floor plan of the Thirsty Tentacle, the best watering hole in the known galaxy.

From: TBA • Min System: 75MHz Pentium, 16Mb RAM, Windows 95.

CARMAGEDDON

Remember the good old days when a racing game meant a little jaunt around a grand prix circuit ending in a mad dash to the finish line?

Well, forget all that right now. *Carmageddon*'s here and you're not going to want to look back. It's much, much more than just your average driving game. Here, it's not just the racing that counts. Indeed, pedestrians are your main target as you drive towards (and through them) at speeds of well over 100mph. Ok it may be sick, but it's not real life so let

your hair down and have some fun.

You'll also get bonus points for destroying other vehicles on the track, depending on the extent of the damage inflicted.

Our demo has

the entire first level of the game. There's no real object, you just have to rack up points by killing people. You should, however, try to follow the racetrack, passing all the checkpoints on the way, otherwise you'll run out of time. Car control is via the arrow keys on the keypad, which you use to steer, accelerate and brake.



Here's the car you race in the demo. As you can see the steel blade on top isn't just for decoration.



Keeping to the track is not always an option in *Carmageddon*. Your car can take an awful lot of punishment before it breathes its last, though.



And yes you do get bonus points for artistic impression.

After the video introduction, just click on the male driver (not the female one) to start the demo. You'll be under attack from your opponents just as soon as the countdown ends, so make sure you're on your guard.

From: SCI • 0171 585 3308 • Min System: Pentium, 8Mb RAM, 30Mb Hard disk space, DOS or Windows 95

MAGIC: THE GATHERING

Whatever possessed people to start meddling with these strange decks of cards in the first place, we don't know. All we can say is that there are a lot of players out there and *Magic* has become an interactive computer game from Microprose.

Our demo features the Duel from the full game. Those who have played the card game will feel comfortable entering the duel; they'll already understand what all the cards are about and what life totals, and such things are.

For the rest of us mere mortals there's a help file called *MAGIC.DOC* in the *PLAYER\MAGIC* directory of the disc. Read it first to learn how to play.



Play the Duel section from *Magic: The Gathering* with our demo.

From: Microprose ☎ 01454 893 893
Min System: 486, 16Mb, 15Mb HD, Win95.

SETTLERS 2: MISSION CD

There are two parts to this *Settlers 2* Mission CD demo – the Level Editor and an updated demo of the original *Settlers 2* game. Massively popular, *Settlers 2* works like most God-style simulation games. You have to help your people survive and thrive by building structures, making more complicated machinery and fighting off your neighbours. The Level Editor is fully featured, but you will not be able to save any of your worlds. We have also restricted playing time to 15 minutes. Note that the full version of the *Settlers 2* Mission CD requires the original *Settlers 2* game. For more see our Favourite Games feature on page 22.



Discover how to conquer a brave new world – or simply design your own.

From: Blue Byte ☎ 01604 259090
Min System: 486DX2/66, 8Mb, 25Mb HD.

OBSIDIAN

It is the year 2066. Pollution has rendered the planet barely habitable. You have entered the world of *Obsidian*. This is a world of dreams – beginning with your own. Nothing behaves according to physical law. It's mesmerising, fantastic. But as the story progresses, from dream to dream, you realise that you are in grave danger. You're not the only one in danger either; everything you know and love is at stake. Gosh!

This demo centres around a sort of revolving door contraption. Walk on to the turn-style platform, click the handle to revolve it, then turn around and walk off. This will leave you in a different location to the one you started in. In the demo you have to solve the riddle of the stopped clocks...



Welcome to the mysterious world of *Obsidian* where we all have flat heads.

From: TBA
Min System: P90, 16Mb, Win95.

FOOTBALL PRO '97

Football Pro '97 is truly authentic American football at its best. With individual player artificial intelligence and motion-captured movements, it's hard to find another football sim which is as realistic.

This demo version allows you one quarter of play (5-15 minutes). At the end of the first quarter it will return you to the main menu. The mouse controls all the plays.

The demo features Pittsburgh vs Dallas. Click on QuickStart from the main menu to start.



Just look at these crazy guys trying to kick a ball between two bits of wood!

From: Sierra On-Line ☎ 0118 920 9100
Min System: 486DX2/66, 8Mb, Win95.

AIR WARRIOR 2

In 1997 *Air Warrior* enters its 10th year as the original and finest multi-player air combat simulation available to civilians. Each night on America Online, CompuServe, and over the internet, pilots from all over the world fly with and against other human combatants in large online arenas. With the debut of *Air Warrior 2*, the number of pilots that can occupy an online arena will more than double. This demo will give you a good idea of what you can expect in the final product, plus provide you with a taste of the game's action offline.



Half the fun of our *Air Warrior 2* demo is working out what all these dials mean.

From: I-Magic ☎ 01344 409399
Min System: 486/100, 16Mb, 18Mb HD, Win95.

LINKS LS

How do you climb higher when you're already on top of the mountain? You sprout wings and fly! After winning nearly every possible award for a sports simulation with *Links 386*, Access Software had to dig deep and stretch the limits of technology to bring you the next generation of Links – *Links LS*. It's one of the best golf games ever and those who don't own it you can now enjoy a piece of the action with this fantastic demo. It needs Windows 95, but it can then be run from DOS or Windows 95. You should choose DOS, as this is an incredible RAM-hungry game which doesn't need Windows 95 around to slow things down.



Try your best to smash a ball through the clubhouse window with *Links LS*.

From: EIDOS ☎ 0181 780 2222
Min System: 486/66, 12Mb, Win95.

THE QUAKE COLLECTION

A battle rages here at Future Publishing over which deathmatch is best: *Quake* or *C&C Red Alert*. Well the Air Strike patch included as part of this month's *Quake* collection goes some way to settling the argument by incorporating the air strike from *C&C Red Alert* into a *Quake* game. To call for an air strike, you'll need 60 shells. Enter Impulse 190 to throw a coordinator, and once it's landed on floor, it'll become the target of a cool F16 fighter strafe. Great stuff!

The BigPlyr patch, meanwhile, makes getting the Quad or Pentagon slightly more exciting. Instead of the player just emitting a feeble glow your body now doubles in size. Bnchskins adds, surprise surprise, a bunch of new skins. Buster adds a deadly new weapon to replace the thunderbolt. For a bit of chemical warfare turn to Gasbomb – a grenade that spawns poison gas will replace the conventional grenade. Grappler is the original Capture the Flag Grappling Hook, but for single players. We've also got a great set of deathmatch levels.

Remember, these patches can only be used with the registered version of the game, not the shareware version. Before you can use a patch you'll need to unzip it with Winzip. You'll find this in the Essentials collection on the coverdisc. All the patches work in slightly different ways, but we've tried to include only the simplest.

Generally, to use a 'prog' patch – which gives you weapons and opponents – you first create a new directory in the *Quake* folder. Then, copy the patch into the directory and unzip it with Winzip. Finally, launch the game by typing *quake -game XXX*, where XXX is the name of the new directory.

To use a new level, create a folder called MAPS in the ID directory, which is in the *Quake* folder. Unzip the new level into Maps and then run *Quake*. To access the new level, go to the *Quake* console and type Map XXX, where XXX is the name of the new level.

Finally, you really do have to read the help files provided with each patch. Remember, none of these patches are commercial products.

From: Various authors
Min System: 486, 8Mb, Quake full version

MASTERCLIPS

MasterClips is a CD collection containing a staggering 150,000 premium images, fonts, sound samples and videos. PC REVIEW and IMSI have teamed up to bring PC REVIEW readers the chance to buy the full *MasterClips* 150,000 package at a special rate of just £59.95 (plus £6.50 delivery and VAT = £78.08). The regular selling price is £84.95 + VAT.

To order the full collection of 150,000 photos, illustrations, fonts and audio files, all you have to do is type your details into the form you'll find in the PICMIX\MASTER directory and print it out. Then send it off, with your money enclosed to the address or fax number quoted below. Alternatively, telephone or email IMSI with your order quoting the March/April/May issue of PC REVIEW.

The second part of our great *MasterClips* give away features another 100 samples. In the PICMIX\MASTER directory on our CD you'll find the following directories:

PHOTOS

Professional quality photos – great for backdrops.

CLIPART

Some fantastic clip art.

FONTS

Contains sample fonts and a help file which shows you how to install them.

SOUNDS

Contains sample WAV files.



From: IMSI # 0181 581 2000
Min System: n/a

THE WORKS

SIMPLY 3D | SIMPLY 3D2



For your delectation, the complete version of Simply 3D.

PC REVIEW has done it again with another stunning full commercial product. With *Simply 3D* from Micrografx you can take any drawing and turn it into a real 3D object, apply textures like wood or stone, turn redwood into oak and pebbles into dinosaur skin. As if that's not enough you can create 3D words and flying titles. *Simply 3D* comes complete with 70 seamless textures and 130 3D objects. Don't click on any of the DEMO icons. Instead, take a look at the 100-page book that's free on the front cover this month.

From: Micrografx ☎ 0345 089372
Min System:486DX/66, 8Mb, 11Mb HD, Windows 3.1 or 95



Explore all the new features of Simply 3D2 with our exclusive coverdisc demo.

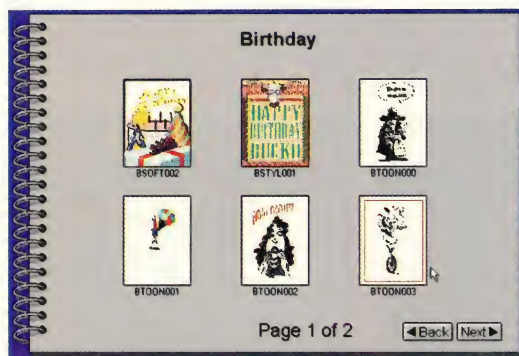
As well as the full version of *Simply 3D*, we're also giving you your first look at the *Simply 3D 2* demo. Some of the features of the full program are omitted, but you can still use supplied 3D objects, create your own 3D text, or create new objects from any of 10 basic 3D shapes – read our tutorial on page 112. The help files have to be installed separately. You'll need to install WinZip from the Essentials section. With *Simply 3D 2* installed, locate WORKS\SIMP3D2\3SD2_4LE.ZIP and unzip it into the *Simply 3D 2* directory.

From: Micrografx π 0345 089372
Min System: 486DX2\66, 8Mb, 22Mb HD, Win95.

MULTIMEDIA

Making Waves

Who says computers can't save you money? With our *PrintMaster* demo you can create and print Birthday, Anniversary, Mother's Day, Father's Day, Christmas and Graduation cards. You'll never need to spend a penny on cards again! You get an unlocking code, but it's free – just call up the phone number given. You'll be asked to give your name, address and read out a product code, which is also given in the demo.



Create and print your own cards for all occasions with our PrintMaster demo.

From: Mindscape ☎ 01444 246 333
Min System: 486, 8Mb, 6Mb HD. Windows 3.1 or 95

Medi8or 3.0

Entrée

This month in we're half way through our three-part Multimedia

Tutorial, which uses this special edition of *Medi8or 3.0 Entrée*, exclusive to our coverdisc. Look in the magazine for the second part of the tutorial. You'll find all the multimedia elements you need in the 37 directory. If you missed last month's edition don't worry, you'll find we've turned last month's feature into a multimedia presentation in the Multimedia section of our disc.

We've also provided some clip art to use in your creations. You'll find it in **MULTIMEDIA8OR\CLIPART**.

PC REVIEW and Matchware have teamed up to offer you a chance to upgrade from *Medi8or Entrée* to *Medi8or Professional* for only £150. See the order form MWORDER.TXT in the ULTIM8MEDI8OR directory for details. The normal price is £175, so you save £25!



Multimedia starts here! You can use our Medi8or demo to create stand alone programs.

From: Matchware ☎ 0181 940 9700
in System: 386, 4Mb. Windows 3.1 or 95

Pic 'n' Mix

Put your hand in the jar and pull out a sweetie.

Welcome to another varied selection of shareware programs specially selected for PC REVIEW. First out of the bag is *Image Browser*. This handy program lets you view thumbnails of your graphics file without cluttering up your hard drive with nasty little files. All graphics formats are catered for.

Using *WebExpress 2.0*, you will be amazed at how fast you can create a great-looking Web site with its visual design tools. By visual design, we mean you'll use tools to build up your Web site just as it will look when loaded into a browser. You won't be side-tracked by the clutter and confusion of HTML codes – instead you can focus on your message and its presentation.

The purpose of *Marketeer* is to allow easy control of all your discussions with customers or prospective customers. It tracks phone calls, correspondence, meetings, reminders, follow-ups and To Do lists. The built-in word processor works much like *MS Word* and is specially integrated with the company and contact records for mailshots.

Image Browser

From: Soft Concepts ☎ 01560 322 619

Min System: 486, 8Mb RAM, 1Mb hard disk space, Windows 95.

WebExpress

From: Thompson Partnership ☎ 01889 564 601

Min System: 486, 8Mb RAM, 4Mb hard disk space, Windows 3.1 or 95.

Marketeer

From: Sterling Data Services ☎ 0734 427 333

Min System: 486, 4Mb RAM, 5Mb hard disk space, Windows 3.1 or 95.

Essential Selection

A whole stack of vital PC tools are filed under the PC Essentials section of our coverdisc menu.

Direct X

Developed by Microsoft, *DirectX* increases the speed of graphics and sound processing under Windows 95.

Video

Run-time versions of two video players: *Quick Time for Windows 2.03* and *Video for Windows 1.1*.

Graphics

Paint Shop Pro is our favourite graphics utility. You'll find both Windows 95 and Windows 3.1 versions on the disc.

Compression

With top compression utility *Winzip*, you can free up hard disk space and also shift bytes on-line for less money. It's the PC's leading file compression format.

Word Express 2.0

Word Express is a fully-featured word processor which does all of the things that its more expensive cousins do at a fraction of the cost.

Troubleshooters guide to CD REVIEW

Having a problem?

If you're having a problem with a CD REVIEW demo we suggest you first read the corresponding entry in these disc pages. If you can see the files on your CD then the chances are that you don't have a faulty CD and may need to read through the Memory section below. If your CD-ROM drive refuses to run, or read the disc, then you should send your CD to the following address and a new, working version will be returned to you within 28 days: PCR67 CD Returns, Diskxpress, 7 Willow Court, Bourton Indus Park, Bourton-on-the-Water, Gloucestershire, GL54 2HQ.

Windows 95

Some DOS Games have problems running in Windows 95. We've included an option to run all the DOS games that we know work in Windows 95 from our menu, but we can't guarantee they will work on all systems. If you find you're having trouble running a DOS game in Windows 95 then try running it from our DOS Menu. First select Restart in DOS Mode from our ShutDown Menu, then when DOS has started type D:\PCR, where D is the prompt of your CD Drive.

Install and run options

Make sure you select the default Installation path for all demos, otherwise when you click the Run button nothing will happen.

Memory

Configuring your PC with just the right amount of free memory can be a tricky as crossing the Alps single-handed, but don't worry, simply follow these easy tips and everything should be fine.

If you have trouble running a demo it might be because you need to free up more conventional memory. Conventional memory is the memory below 640K. Even if you have a PC with 8Mb of RAM, that doesn't mean that you'll automatically have enough conventional memory to run a demo.

To find out how much free conventional memory you have type MEM [Enter] at the DOS prompt. If the figure beside the line 'largest executable program size' is less than about 550K then you're system probably isn't set-up properly.

You can free up more conventional memory by loading the EMM386 driver, which allows you to move other device drivers out of conventional memory and into upper memory, thus freeing up more space. To add the EMM386 driver you need to edit your system files (the AUTOEXEC.BAT and CONFIG.SYS files). Make a copy of them before editing. At the C:\> prompt type:

```
COPY C:\CONFIG.SYS CONFIG.BAK
COPY C:\AUTOEXEC.BAT AUTOEXEC.BAK
```

Then, if you have any problems later on you can return to these files by typing:

```
COPY C:\CONFIG.BAK CONFIG.SYS
COPY C:\AUTOEXEC.BAK AUTOEXEC.BAT
```

To edit your system files type EDIT followed by the name of the file. The following lines should be in your CONFIG.SYS file:

```
DEVICE=C:\DOS\HIMEM.SYS
DEVICE=C:\DOS\EMM386.EXE NOEMS
DOS=HIGH, UMB
```

Any lines starting with DEVICE should be changed to DEVICHIGH.

In the AUTOEXEC.BAT any device being loaded should now be loaded into high memory. For example the line:

```
C:\MOUSE\MOUSE should read:
```

```
LH C:\MOUSE\MOUSE
```

These changes should result in greater free conventional memory. Another way to free up more conventional memory is to remove any Terminate and Stay Resident (TSR) programs that are automatically loaded by the system files. The following lines are not essential for using CD REVIEW. If you see them in your system files, disable them by putting REM at the start of the line.

In Config.sys you may want to remove any line containing SMARTDRV.SYS, DISPLAY.SYS or COUNTRY.SYS.

In Autoexec.bat you could remove any line containing SMARTDRV or DOSKEY and any line that loads a memory resident virus checker.

You can return your system to its previous state by removing the REM commands, then rebooting your system. Remember, any change to a system files will not take effect until your system has been rebooted.

EMS Memory

Some PC games require EMS memory rather than XMS memory. To configure your PC for EMS memory change the line in your CONFIG.SYS reading:

```
DEVICE=C:\DOS\EMM386.EXE NOEMS to:
DEVICE=C:\DOS\EMM386.EXE RAM
```

and reboot your machine for the changes to take effect. You will probably have to change back to XMS memory by reversing the above change for your other programs to work.

DirectX

DirectX is a series of drivers developed by Microsoft to increase the speed of graphics and sound processing under Windows 95. In particular, games and multimedia applications demand the fastest possible display performance. The drivers are still in development however, and there have been reports of DirectX overwriting default graphics drivers and thus crashing Windows 95.

If, after running a DirectX demo from CD REVIEW, you experience graphics problems when restarting Windows 95, you will need to restore the original drivers. To do this:

1. Shut down your PC.
2. Restart Windows in safe mode. To do this, press [F8] when your PC reports it is 'Starting Windows 95'. Then select 'Safe Mode' from the menu
3. At the desktop, insert the CD REVIEW disc. Press Start and then select Run from the Taskbar.
4. At the prompt type D:\DIRECTX\DXSETUP.EXE (where D: refers to the letter of your CD drive).
5. The DirectX set-up program will now appear. Select 'Restore Windows 95 Drivers' to return your PC to normal.

We should add these are problem are rare, and they should not put you off enjoying the contents of CD REVIEW.

Disclaimer

CD REVIEW is thoroughly checked for all known viruses, and independently certified before duplication. While every care is taken in selection, testing and installation of CD REVIEW, Future Publishing cannot accept responsibility for loss or damage occurring during its use. You are strongly advised to have recent, verified back-ups of all important files before installing any new software.

Support

If you need help getting a demo to work then phone our Technical Support line on 01225 442244 and ask for READER SUPPORT.

Better still, e-mail support@futurenet.co.uk.

RUNNING PROGRAMS MANUALLY

Windows 3.1

To run a program manually using Windows 3.1 select File from the Windows *Program Manager* menu, then select Run from the pull-down menu. Use the Browse option to select the directory, and then the file. Double click on the file name to run it.

Windows 95

Using Windows 95, click the Start button from the menu bar, then select Run. Use the browse option to select the directory, and then the file.

DOS

Type CD followed by the directory name at the DOS prompt of your CD-ROM drive, then press [Enter]. Finally, type the name of the file and press [Enter].

Program directory and filename

Air Warrior II
D:\PLAYER\AIRWAR\AW2DEMO.EXE
Carmageddon
D:\PLAYER\CARMA\INSTALL.BAT
Compuserve Sitw
D:\WORKS\COMPU\CS301\SETUPEXE
Football Pro '97
D:\PLAYER\FOOTPRO\FB97DEMO\SETUPEXE
Image Browser
D:\PICMIX\IMAGEB\SETUPEXE
IMSI Master Clips D:\PICMIX\MASTER
Links LS D:\PLAYER\LINKSL\SETUPEXE
Magic: The Gathering
D:\PLAYER\MAGIC\MTGDEMO.EXE
Marketeer
D:\PICMIX\MARKET\SETUPEXE
Medi8or EntrEe 3.0
D:\MULTIM\MEDI8OR\INSTALL.EXE
Obsidian
D:\PLAYER\OBSID\INSTALL.EXE
Paint Shop Pro 4.1
D:\ESSENT\PSP4\SETUPEXE
Print Master D:\PMWDEMO\INSTALL.EXE
Quake Levels D:\QUAKE
Settlers II MissionCD
D:\PLAYER\SETTLER2\INSTALL.BAT
Simply 3D D:\SETUP
Simply 3D 2
D:\WORKS\SIMP3D2\S3D2WEB.EXE
Space Bar D:\PLAYER\LARGE\SPACEBAR.EXE
Tomb Raider Part 2
D:\PLAYER\TOMB2\INSTALL.BAT
Web Express 2 D:\PICMIX\WEB\SETUPEXE
Word Express 2.0
D:\ESSENT\WE95\SETUPEXE
Winzip 6.1
D:\ESSENT\WIN95\SETUPEXE

Contacting Reader Support

Before contacting our technical support department please make sure that you have all the relevant information that we will need. We have included a program on CD REVIEW to help you with this. Just follow the CD REVIEW and run it from the trouble shooting area of our main interface. When finished, save it as a text file or print it out. When you call in, having all the details to hand will speed up the help process.



OVER THE TOP

Three lucky readers are going to take their PCs into the next millennium with an OverDrive chip with MMX technology from Intel.

Over
£1000
worth of hi-tech
hardware up for
grabs



THOSE RULES

1. Answers please on a postcard or a stuck down envelope to: Over the Top, PC REVIEW, Future Publishing, 30 Monmouth Street, Bath, BA1 2DL.
2. Don't forget to put your name and address on the entry. Make sure you get it to us before 28 April.
3. This competition is not open to employees of Intel or Future Publishing.
4. No multiple entries.
5. No correspondence will be entered into over the results of the competition. The judge's decision is final.
6. The answer will be printed in our next issue, and the lucky winners' names will be announced in the June issue, on sale 27 May.

For more on MMX OverDrives, contact your local dealer or check out Intel's Web site at <http://www.intel.com/procs/overdrive>

PCs are never fast enough and they're always going out of date. Still, with MMX technology, Intel has done more than simply increased the clock speed. It's completely revamped the PC's processor for games and multimedia. Are you going to be miss out on the fun?

Well, maybe not, because we've teamed up with the charitable souls at Intel to haul three of you out of the technological third world and into the MMX age. Yes, we've got three spanking new OverDrives with MMX technology to hand out, worth up to £385 pounds each in the shops, but free to the lucky winners. Fitting an OverDrive takes just five minutes, after which you'll find yourself enjoying faster clock speeds and better multimedia.

According to Intel's own figures, image processing runs up to six times faster with MMX, with video and audio playback and 3D geometry about three times faster. To enjoy these benefits, software must be specially written for MMX. Yet even non-MMX software runs about 20 per cent faster, due to other tweaks made to

the Pentium architecture.

What do you have to do to win one of these babies? Run a marathon? Impersonate a 50s pop star? Hand us a suitcase stuffed with cash? Oh no...

To Enter...

Simply answer this question. We all know an MMX Pentium shifts graphics about the screen faster than a Pentium.

But who's the world's fastest man across 100 metres?

As well as your answer, please indicate whether you have a P90, a P75 or a P100 so we know which OverDrive to send you. (Unfortunately, if your PC doesn't include one of these three Pentium processors you will be unable to fit one of the OverDrives on offer here.)

TECHNICAL SPECIFICATION

Intel has so far announced two new MMX Pentium OverDrives. The first upgrades a 75MHz machine to 125MHz, and P90s to a nippy 150MHz. The second OverDrive cranks 100MHz machines up to 166MHz. Prices stand at £315 for the P125/150 OverDrive and £385 for the 166MHz model. Future MMX OverDrives will upgrade 120 and 133MHz Pentiums to

clock speeds of 180 and 200MHz. OverDrives are also planned for P150s and P166s. There will be no MMX enhanced OverDrives for P60s, nor for 486-based PCs. Intel claims its new OverDrives are compatible with over 90 per cent of P75s, P90s and P100s. You can find out whether your PC is upgradeable at <http://www.intel.com/procs/overdrive>.

"The one that really stood out from the crowd was the Special Reserve MAXX"

"I don't believe it! - a mere £1700 - the BIZZ is damn good value for money"



The Special Reserve MAXX PC and Internet-ready MAXX.net PC

MAXX, AS THE NAME SUGGESTS, IS A FLAGSHIP AMONG COMPUTERS. MASSIVE HARD DRIVE, FASTEST GRAPHICS, BEST SOUND, LATEST SOFTWARE, TOP GAMES: IT ALL ADDS UP TO A TECHNOLOGICAL DREAM MACHINE.

MAXX PC FROM £1529.99 INCLUSIVE OF VAT AND:

- 3200 MB Quantum Fireball Tempest quality Mode 4 hard drive
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- MATROX MYSTIQUE 3D MGA PnP wickedly fast 3D Windows and Graphics accelerator. Up between 10% and 25% on Diamond Stealth 3D. 2 MB SGRAM high speed video memory
- GIGABYTE INTEL TRITON II 430HX High performance motherboard. MMX compatible and fitted with a full 512k of Pipeline Burst Cache. INTEL PENTIUM CPU with silent fan
- SAMSUNG SYNCMASTER 14" 0.28 dot pitch SVGA colour monitor with tilt and swivel stand and two year Samsung on-site warranty. Optional 15" or 17" models (please see OPTIONS)
- 32 MB FAST EDO RAM expandable to 512 MB (6 slots)
- LABTEC LCS1024 20 Watt (320W peak) stereo speakers. Free standing or monitor mounted with bracket included. Selected for best sound quality
- CREATIVE LABS DESK MICROPHONE, WINDOWS 95 KEYBOARD, MOUSE AND MAT
- ALL SOFTWARE PRE-INSTALLED AND SUPPLIED ON CD
- WINDOWS 95 RELEASE 2 Microsoft's latest system software
- MICROSOFT WORKS FOR WINDOWS 95 A leading integrated suite of applications including a user-friendly Word Publisher (Word Processor with graphics mode), Spreadsheet and Database. Windows 95 enhanced
- CREATIVE LABS SOUND SOFTWARE SUITE & MATROX MPEG VIDEO CD SUITE
- SIX MICROSOFT CD's. Encarta 96 best-selling Encyclopedia, Autoroute Express (A.K.A. Automap), Microsoft Wine Guide to 6000 wines, Explorapedia spectacular Encyclopedia for kids, Creative Writer and Fine Artist brilliant programs for young writers or budding designers
- QUAKE, DUKE NUKEM & SWIV 3D Episodes (not on CD) and DOOM 2 SCREEN SAVER
- 12 TOP GAMES. Settlers 2, Command & Conquer, Archimedian Dynasty, Star Trek TNG - A Final Unity, Ultimate Doom, Hexen, Sensible World of Soccer, Championship Manager 2, UFO - Enemy Unknown, Transport Tycoon Deluxe, Microsoft Golf 2 Multimedia and Railroad Tycoon Deluxe
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- ONE YEAR ON-SITE WARRANTY and optional 2nd Year

★★★★★ WHAT THE PRESS SAY

PC HOME 95% TOP RATING EVER "The Special Reserve PC is an outstanding package. It worked perfectly from its first power up and was nicely set up with all the software installed and ready to run... Two similar specification PC's can actually be as different as chalk and cheese. The one that really stood out from the crowd was the Special Reserve PC, it really is a stunning package."

PC PLUS - SECOND REPORT OF LONG TERM TEST (MARCH '97) "Four months on and still smiling... Taking into account the superb software bundle I'd be happy if I'd paid for it. But if I was thinking of buying a new PC right now I'd hold off to see how the prices of MMX machines look"



The Special Reserve BIZZ PC and Internet-ready BIZZ.net PC

WITHIN THE FAMILY OF SPECIAL RESERVE PC'S THE BIZZ IS THE WORKHORSE. ONLY WINDOWS 95 PLUS SOUND AND GRAPHICS SOFTWARE IS INCLUDED. BUT IN TERMS OF PROCESSING POWER AND DISK STORAGE THE BIZZ IS THE BEST FOR BUSINESS USE, SHARING THE SAME GRAPHICS CARD, CD ROM DRIVE AND HARD DRIVE AS THE MAXX. AND INSTEAD OF THE STANDARD SCREEN IT FEATURES A 15" M AUDIO/VISUAL MONITOR.

BIZZ SPECIFICATION IS AS PER MAXX (ABOVE) BUT WITH THE FOLLOWING CHANGES:

- SOUND BLASTER 16 Vibra sound card. Instead of Sound Blaster 32
- WINDOWS 95 RELEASE 2, CREATIVE LABS SOUND SOFTWARE SUITE and MATROX MPEG VIDEO CD SOFTWARE SUITE but no other software included
- Additional NE2000 COMPATIBLE ETHERNET CARD with BNC and twisted pair network.
- SAMSUNG SYNCMASTER 15" M ADV colour monitor. Instead of 14" Monitor and Speakers. With integrated high quality speakers, headphone and microphone sockets. Maximum resolution 1024 x 768 @ 60 Hz. Three year Samsung on-site warranty on the monitor.

★★★★★ WHAT THE PRESS SAY

COMPUTER LIFE "I don't believe it! A mere £1700 (+VAT). The Bizz is damn good value for money... the hard drive is an ultra-fast Quantum Fireball... you won't find significantly better quality components anywhere... a stonking spec for the price"

PC ADVISER "Sizzling PC if you are looking to upgrade or want the best PC for the office... designed to deliver maximum power and performance... games and multimedia users should take a look because this machine has a lot to offer"

Additional features in the NEW MAXX.net and BIZZ.net PC's

- MODEM BLASTER 28.8 VOICE (MAXX) or PHONE BLASTER 28.8 VOICE (BIZZ) A quality high-speed Creative Labs Internal Fax/Modem. With speakerphone, answerphone, fax broadcasting, phone book, remote access, voicemail, e-mail and a host of other features. MAXX also has Microsoft Phone and Microsoft Voice Recognition
 - SUPERVOICE SOFTWARE Answers your telephone, takes messages, forwards calls, alerts your pager, sends and receives faxes. Includes Visual Dialer and TextAssist text-to-speech
 - 20 HOURS FREE INTERNET CONNECTION via Compuserve and AOL
 - 01279 600208 INTERNET HELP-DESK to solve connection problems, or to register you for unlimited internet access via Global Internet
- THE MAXX.NET AND BIZZ.NET ARE INTERNET-READY, INCLUDING A HIGH SPEED MODEM, AND COMPREHENSIVE SOFTWARE. SEE INTERNET ADVICE AND ABOUT MMX IN OUR CATALOGUE.

"The Games Bundle - always one of the things that makes Special Reserve special" (PC Gamer magazine)

MAXX software bundle is shown below. Our award-winning QUAD and FOXX models also carry and extensive range of free software.

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We stock over 2,500 products, all at discounted prices, many at below trade price, including 7 full pages of CD ROM software. A small selection from our catalogue is listed below. All prices include VAT. If you require an item that is not listed please call 01279 600204. We offer a full fitting service (£10 for RAM or £20 others). Special Reserve PC's can be tailored to your needs.

PC OPTIONS

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SAMSUNG 15" GLI MONITOR Replaces 14"	£100.00
SAMSUNG 17" GLI MONITOR Replaces 14"	£300.00
EXTRA 2 MB GRAPHICS SGRAM IN MYSTIQUE	£49.99

SMALL SELECTION

	INC VAT
3.2 GB HARD DRIVE High quality Quantum drive, 16Mb/sec transfer rate, 10.5Ms access time	£239.99
3.2 GB IOMEGA DITTO DRIVE High capacity backup drive, includes one 3.2 GB tape cartridge	£189.99
APOCALYPSE 3D GRAPHIC ACCELERATOR With Power VR chip and 4MB SDRAM	£159.99
CANON FAX 4100 COLOUR PRINTER With free Pressworks 2 DTP software	£199.99
CREATIVE LABS SOUND BLASTER AWE 64	£159.99
HEAD TO HEAD NETWORK KIT FOR 2 PC's Ethernet network pack for connecting 2 PC's	£49.99
HP SURESTORE CD WRITER External CD ROM drive, capable of recording to CD, with blank CD	£449.99

MATCHED PAIR OF 4 MB EDO RAM	£33.99
72 pin SIMM 70 Ns access time	
MATCHED PAIR OF 8 MB EDO RAM	£61.99
72 pin SIMM 70 Ns access time	
MATCHED PAIR OF 16 MB EDO RAM	£123.99
72 pin SIMM 70 Ns access time	
MUSTEK PARAGON 600SP SCANNER	£199.99
6,400 DPI colour flatbed scanner	
OKIPAGE 4W LED MONO PRINTER Near silent laser quality printer	£199.99
PSION SERIES 3C 2 MB ORGANISER	£389.99
US ROBOTICS SPORTSTER EXT 33.6 FAX/MODEM High quality fax/modem upgradeable to 56K baud	£169.99
SUPERMOUSE ERGONOMIC MOUSE	£14.99
AMIGA EMULATOR CD ROM	£15.99
SPECTRUM CD 96	£15.99
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